CONNECT
NEIGHBORHOOD CENTER & GARDEN
SPECIAL USE PERMIT

APPLICATION TO WASHOE COUNTY

SUBMITTED ON BEHALF OF

SAGE PROPERTY VENTURES, LLC
5100 WEST 4TH STREET
CARSON CITY, NEVADA 89703

MAY 15, 2020

TECTONICS
DESIGN GROUP

TECTONICS DESIGN GROUP

May 15, 2020

Planning Department
Washoe County Community Services Department
1001 East Ninth Street
Reno, Nevada 89512

RE: Connect Neighborhood Center & Garden

To Whom It May Concern:

Tectonics Design Group is pleased to submit a Special Use Permit (SUP) request on behalf of the Connect Neighborhood Center and Garden project. The enclosed Washoe County applications and supporting materials are meant to provide Community Services staff and the Board of Adjustment ample detail to approve a SUP for: 1) site grading and 2) development of a 16,015 square foot neighborhood center (including personal services) in a Low Density Suburban zone to be located at 2500 and 2540 Crossbow Court in Reno, Washoe County, Nevada (APNs 152-921-01 and 152-921-02).

SUP approval may be justified on the following findings:

a) Consistency. The proposed use is consistent with the action programs, policies, standards and maps of the Master Plan and the applicable area plan;

Connect is a unique holistic wellness concept new to the Truckee Meadows. For this reason, the developer had multiple pre-application meetings and conversations with Washoe County planning staff (who were in consultation with County legal staff) to better define the intended uses associated with this project prior to submitting a SUP application.

The 1.847-acre site is located in the Southwest Truckee Meadows Plann Area of Washoe County and has a Master Plan Suburban Residential (SR) designation with accompanying Low Density Suburban (LDS) zoning. Community gardens and neighborhood centers providing personal services such as mindful movement and functional fitness studios, indoor and outdoor meditation spaces for adults and children, retail, and coffee/tea and nutritious takeaway meals are all permitted as primary uses in LDS zones. A demonstration kitchen, co-working pods, and training/meeting spaces are also permissible ancillary uses in this zone (refer to the land use maps provided).

Applicable master plan policies supporting new development are identified below:

- LUT.4.1 Maintain a balanced distribution of land use patterns to:
  - Provide opportunities for a variety of land uses, facilities and services that serve present and future population;
  - Promote integrated communities with opportunities for employment, housing, schools, park civic facilities, and services essential to the daily life of residents
- LUT.21.2 Nonresidential development shall be compatible with the nearby neighborhoods, service and facility capacities, and the surrounding environment

b) *Improvements. There are or will be adequate services and infrastructure to support the proposed development;*

The project is planned for two vacant parcels surrounded by existing or planned civic uses such as schools and a park. It will tie into existing utilities and infrastructure present in the streets fronting the site and already sized for buildout. Waste Management, NV Energy, Truckee Meadows Water Authority, and the Truckee Meadows Water Reclamation Facility will serve the generated demand from Connect Neighborhood Center and Garden.

c) *Site Suitability. The site is physically suitable for the type of development and for the intensity of development;*

From an architectural and site planning perspective the parcel has a panhandle shape which clusters development to the south. This placement and the general elevation offer inspiring mountain and city views inviting deeper reflection and contemplation in one's meditative practice.

Site hydrology, geology, or soils pose no hazards or constraints on the project as designed. This is confirmed in the Tectonics Design Group Drainage Report and the Nova geotechnical study included with this application. Considerable attention has been paid to transportation, access and parking in this case. The site has been designed for single direction ingress/egress, stop control, and driveway alignment to mitigate vehicular traffic associated with school peak hour pick-up and drop off in the site vicinity. A director's modification has been submitted for use of the Institute of Transportation Engineers 'recreation community center' parking rate, although the design mitigates this by offering 18 additional spaces above the ITE calculation. Transportation Impact Analysis and Parking Justification reports conducted by Solaegui Engineers (are included as appendices following this application). Parking, as shown on the attached Preliminary Site Plan, is accommodated entirely on site and screened from street views by either building or new landscaping.

Connect currently provides kids meditation classes at Hunsberger Elementary School but has plans to expand school services once a new permanent facility is constructed. This site has an unmatched location for the success of after school wellness programs because it encourages healthy community habits and serves as a pedestrian connection link (refer to Site Photographs). The following is an overview of Connect business operations which is truly a shared use facility – not all activities will take place at the same time and once operations commence then scheduling and programming will be paramount.

Operations Overview

- General Hours: weekdays 7:00 am to 9:00 pm and 7:00 am to 5:00 pm on weekends
- Peak Hours: mornings 8:00-10:00 am and weekday afternoons 3:00-6:00 pm

Building Occupancy

It is estimated that the building may have 100 people present during its peak hours, examples of various activities that could occur on site may include:
12-15 employees during peak hours
20 attendees in adult studio classes and trainings
15-20 children in the under age 16 meditation class
50-70 attendees in the occasional community lectures or demonstrations

d) *Issuance Not Detrimental: The issuance of the permit will not be significantly detrimental to the public health, safety or welfare; injurious to the property or improvements of adjacent properties; or detrimental to the character of the surrounding area; and*

Connect is an impact investment benefitting community health with a mission to promote wellness for all ages. Issuance of a building permit will be neither detrimental nor injurious to adjacent properties and/or the public. With the exception of a community garden, most operations will occur indoors. As shown on the building elevations the design blends contemporary architecture with colors and materials that complement the setting, and that elevate the architectural quality and aesthetic conditions currently present in the site vicinity. Exterior lighting has also been designed for Washoe County residential adjacency standards and all parking lot and all exterior wall mount fixtures meet dark sky requirements (refer to the Photometric Plan included with this application). The proposed monument signage meets Washoe County Land Development Code standards.

e) *Effect on a Military Installation: Issuance of the permit will not have a detrimental effect on the location, purpose or mission of the military installation.*

This finding is not applicable since there are currently no military installations in the site vicinity.

Thank you for taking time to review the Connect Neighborhood Center and Garden Special Use Permit application. I appreciate your time and consideration. Should you have any questions or be in need of additional information, please feel free to contact me at (510) 993-4034 or via email at kerry@kdrohrmeier.com.

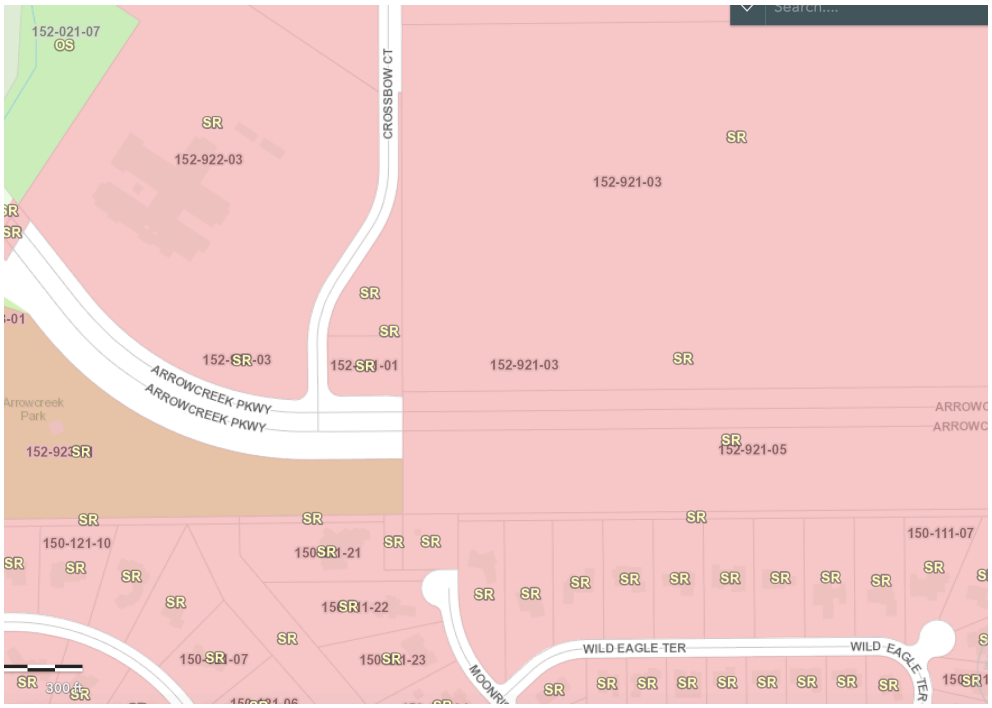
Sincerely,

Kerry Rohrmeier, PhD AICP

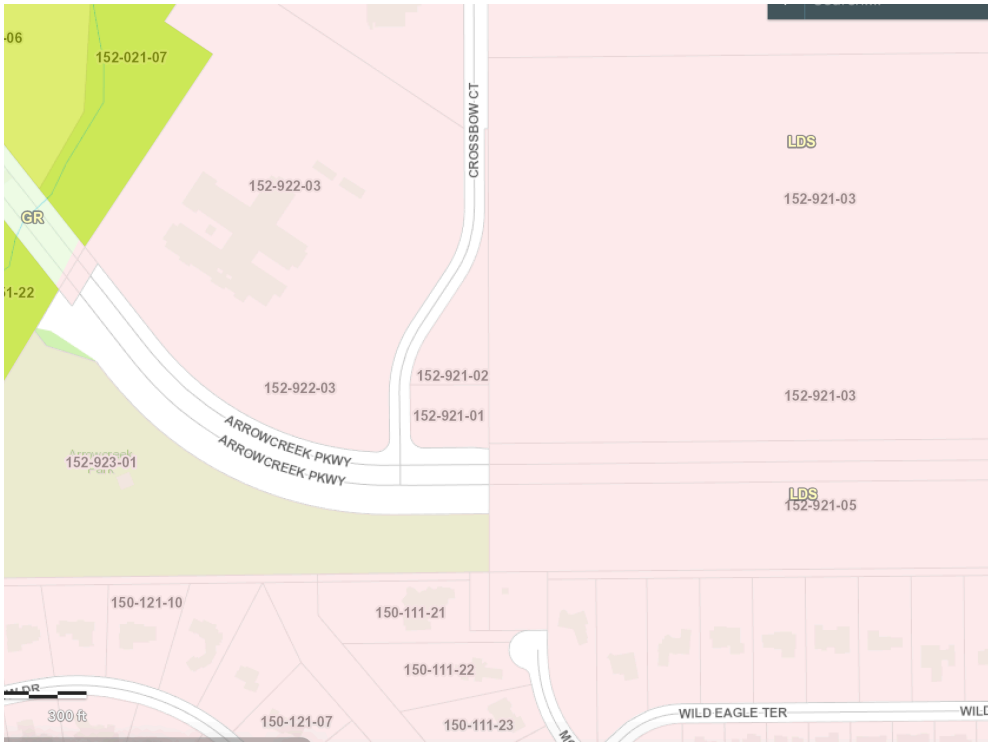
Enclosure

Fees
Owner Affidavit
General Development Application
Special Use Permit Applications
Property Tax Proof
Preliminary Site Plan
Preliminary Grading Plan
Photometric Plan
Landscape & Irrigation Plan
Cross Sections
Signage Details
Preliminary Landscape Plan
Preliminary Irrigation Plan
Conceptual Building Elevations
Conceptual Building Floorplan
Preliminary Photometric Plan
Preliminary Hydrology Report
Preliminary Geotechnical Report
Solaegui Engineers Traffic Impact Report
Solaegui Parking Study

Master Plan *– Suburban Residential in the Southwest Truckee Meadows Plan Area*

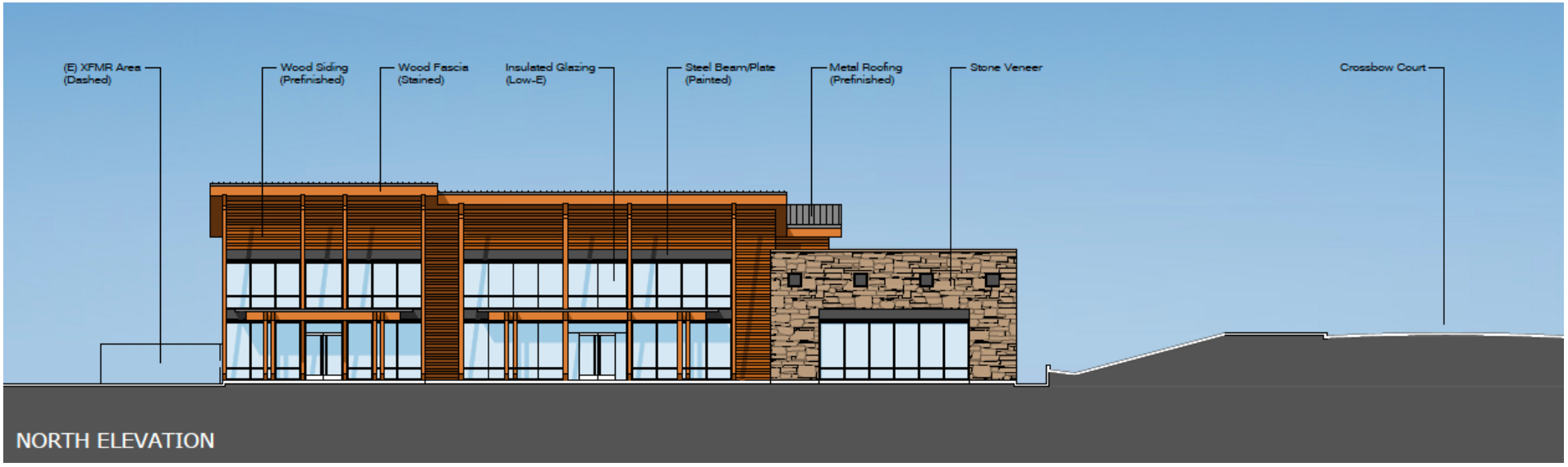


Zoning *– Low Density Suburban*



***Site Photographs**. Image 1 (top) is an aerial image of the two parcels and vicinity including Hunsberger Elementary School (west), future site of Marce Middle School (east), and Arrowcreek Parkway (south). Images 2 and 3 (below) are views of the site as seen from Arrowcreek Parkway and Crossbow Court.*

Key design features. *The Site Plan (above) shows a 16,015 square foot building with 48 parking stalls, and 40,831 square feet of new landscaping. The north elevation (below) demonstrates a contemporary mountain architecture built into the contours and comprised of natural materials and earth tones. The monument sign shown (top right) meets code while complementing the building.*



Washoe County Development Application

Your entire application is a public record. If you have a concern about releasing personal information, please contact Planning and Building staff at 775.328.6100.

Project Information

Staff Assigned Case No.: _____

Project Name:
Connect Neighborhood Center and Garden

Project Description: Grading activities and land development for a new wellness oriented neighborhood center and community garden on two vacant parcels zoned Low Density Suburban.

Project Address: 2500 and 2540 Crossbow Court, Reno, Nevada 89511

Project Area (acres or square feet): 1.847 acres

Project Location (with point of reference to major cross streets **AND** area locator):
Vacant land at the northeast corner of Arrowcreek Parkway and Crossbow Court.

Assessor's Parcel No.(s):	Parcel Acreage:	Assessor's Parcel No.(s):	Parcel Acreage:
152-921-01	0.774 acres		
152-921-02	1.073 acres		

Indicate any previous Washoe County approvals associated with this application:
Case No.(s). NA

Applicant Information (attach additional sheets if necessary)

Property Owner:	**Professional Consultant:**
Name: Sage Property Ventures, LLC	Name: Tectonics Design Group
Address: 510 West 4th Street	Address: 730 Sandhill Road, Suite 250
Carson City, Nevada Zip: 89703	Reno, Nevada Zip: 89521
Phone: (917) 532-2396 Fax:	Phone: (775) 824-9988 x 11 Fax:
Email: jenhutter@icloud.com	Email: matt@tdg-inc.com
Cell: (917) 532-2396 Other:	Cell: (775) 824-9988 x 11 Other:
Contact Person: Jennifer Hutter	Contact Person: Matthew Rasmussen, PE
Applicant/Developer:	**Other Persons to be Contacted:**
Name: Sage Property Ventures, LLC	Name: Kerry Rohrmeier
Address: 510 West 4th Street	Address: 838 Santa Barbara Road
Carson City, Nevada Zip: 89703	Berkeley, California Zip: 94707
Phone: (917) 532-2396 Fax:	Phone: (510) 933-4034 Fax:
Email: jenhutter@icloud.com, heatherhaslem@gmail.com	Email: kerry@kdrohrmeier.com
Cell: (917) 532-2396 Other:	Cell: (510) 993-4034 Other:
Contact Person: Jenn Hutter & Heather Haslem	Contact Person: Kerry Rohrmeier

For Office Use Only

Date Received: Initial:	Planning Area:
County Commission District:	Master Plan Designation(s):
CAB(s):	Regulatory Zoning(s):

Property Owner Affidavit

Applicant Name: Sage Property Ventures LLC

The receipt of this application at the time of submittal does not guarantee the application complies with all requirements of the Washoe County Development Code, the Washoe County Master Plan or the applicable area plan, the applicable regulatory zoning, or that the application is deemed complete and will be processed.

STATE OF NEVADA)
)
COUNTY OF WASHOE)

I, Jennifer Aleman Hutter,
(please print name)

being duly sworn, depose and say that I am the owner* of the property or properties involved in this application as listed below and that the foregoing statements and answers herein contained and the information herewith submitted are in all respects complete, true, and correct to the best of my knowledge and belief. I understand that no assurance or guarantee can be given by members of Planning and Building.

(A separate Affidavit must be provided by each property owner named in the title report.)

Assessor Parcel Number(s): 152-921-01 and 152-921-02

Printed Name Jennifer Aleman Hutter

Signed JAHutter

Address 510 W. 4th Street

Carson City, NV 89703

KENDALL M. STIEBER
Notary Public, State of Nevada
Appointment No. 08-8195-5
My Appt. Expires Oct 2, 2021

(Notary Stamp)

Subscribed and sworn to before me this 13 day of May, 2020.

Kendall M. Stieber Carson County, NV

Notary Public in and for said county and state

My commission expires: October 2, 2021

*Owner refers to the following: (Please mark appropriate box.)

- ❑ Owner
- ❑ Corporate Officer/Partner (Provide copy of record document indicating authority to sign.)
- ❑ Power of Attorney (Provide copy of Power of Attorney.)
- ❑ Owner Agent (Provide notarized letter from property owner giving legal authority to agent.)
- ❑ Property Agent (Provide copy of record document indicating authority to sign.)
- ❑ Letter from Government Agency with Stewardship

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Signed J A Hutter

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STATE OF NEVADA)
)
COUNTY OF WASHOE)

I, Karl George Hutter,
(please print name)

being duly sworn, depose and say that I am the owner* of the property or properties involved in this application as listed below and that the foregoing statements and answers herein contained and the information herewith submitted are in all respects complete, true, and correct to the best of my knowledge and belief. I understand that no assurance or guarantee can be given by members of Planning and Building.

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Assessor Parcel Number(s): 152-921-01 and 152-921-02

Printed Name Karl George Hutter

Signed

Address 570 W. 4th Street

Carson City, NV 89703

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Special Use Permit Application
Supplemental Information

(All required information may be separately attached)

1. What is the project being requested?

Connect is a 16015-square foot neighborhood center planned in an Low Density Suburban zone. It is designed as a destination to promote wellness for all ages. Connect will house mindful movement studios (for adults and children), personal coaching and co-working spaces, coffee/tea and nutritional takeaway meals, retail, training and demonstration facilities, and a meditation and community garden.

2. Provide a site plan with all existing and proposed structures (e.g. new structures, roadway improvements, utilities, sanitation, water supply, drainage, parking, signs, etc.)

This application includes a Preliminary Site Plan (with utilities), Preliminary Grading Plan, Cross Sections, Landscape and Irrigation Plans, Building Elevations and a Floorplan, and a Photometric Plan.

3. What is the intended phasing schedule for the construction and completion of the project?

Site grading will be the first phase of this project to be followed soon after by a building permit and construction phase. The new building and garden will be completed together with operations set to begin in 2021.

4. What physical characteristics of your location and/or premises are especially suited to deal with the impacts and the intensity of your proposed use?

The location is ideal for the Connect business model, which is unlike any other neighborhood center in Northern Nevada. The site is zoned LDS but land uses in the immediate vicinity are all complementary and civic oriented. The nearest residential is separated from this site by the 4-lane divided Arrowcreek Parkway.

5. What are the anticipated beneficial aspects or affects your project will have on adjacent properties and the community?

Wellness and improved community health are beneficial aspects of this project. Connect already offers children's mediation and mindfulness services at Hunsberger Elementary School (across Crossbow Court) and has plans to expand after school offerings to Sage Ridge and Mace Middle School - all adjacent and walkable- once this new facility is built.

6. What are the anticipated negative impacts or affect your project will have on adjacent properties? How will you mitigate these impacts?

Negative impacts have been mitigated. Bicycle and pedestrian connection between Connect and the nearby schools will be strongly encouraged. Vehicular circulation and parking has been addressed through recommendations of Solaegui Engineers including one way single lane ingress/egress, driveway alignments, and stop control.

7. Provide specific information on landscaping, parking, type of signs and lighting, and all other code requirements pertinent to the type of use being purposed. Show and indicate these requirements on submitted drawings with the application.

All parking, lighting, landscaping, and monument signage are designed pursuant to the Washoe Count Land Development Code

8. Are there any restrictive covenants, recorded conditions, or deed restrictions (CC&Rs) that apply to the area subject to the special use permit request? (If so, please attach a copy.)

❑ Yes	■ No

9. Utilities:

a. Sewer Service	Truckee Meadows Water Reclamation Facility (TMWRF)
b. Electrical Service	NV Energy
c. Telephone Service	AT&T or Spectrum
d. LPG or Natural Gas Service	NV Energy
e. Solid Waste Disposal Service	Waste Management
f. Cable Television Service	Spectrum
g. Water Service	Truckee Meadows Water Authority (TMWA)

For most uses, Washoe County Code, Chapter 110, Article 422, Water and Sewer Resource Requirements, requires the dedication of water rights to Washoe County. Please indicate the type and quantity of water rights you have available should dedication be required.

h. Permit #	NA	acre-feet per year	
i. Certificate #	NA	acre-feet per year	
j. Surface Claim #	NA	acre-feet per year	
k. Other #	NA	acre-feet per year	

Title of those rights (as filed with the State Engineer in the Division of Water Resources of the Department of Conservation and Natural Resources).

TMWA will serve this site and water rights, if needed, will be determined during the Discovery process and dedicated accordingly.

10. Community Services (provided and nearest facility):

a. Fire Station	Truckee Meadows Fire Station 36 is 0.5 miles away on Arrowcreek Pkwy
b. Health Care Facility	Renown South Meadows Medical Center is 4.7 miles away
c. Elementary School	Hunsberger Elementary School and Sage Ridge Schools are across Crossbow Ct
d. Middle School	Marce Herz Middle School is planned for the adjacent parcel to the east
e. High School	Galena High School is 2.3 miles away
f. Parks	The Park at Arrowcreek is across Arrowcreek Pkwy
g. Library	South Valleys Library is 2.5 miles away
h. Citifare Bus Stop	Damonte Ranch Pkwy at S. Virginia St is the nearest bus stop at 3.3 miles away

Special Use Permit Application
for Grading
Supplemental Information

(All required information may be separately attached)

1. What is the purpose of the grading?

   Land disturbing activities are required to prepare the currently vacant site for new development.

2. How many cubic yards of material are you proposing to excavate on site?

   In total there will be approximately 2,700 cubic yards of excavation at this site.

3. How many square feet of surface of the property are you disturbing?

   New development will disturb approximately 65,000 square feet of property surface.

4. How many cubic yards of material are you exporting or importing? If none, how are you managing to balance the work on-site?

   Approximately 1,200 cubic yards will be exported from the site. Most of the grading activities will be covered by buildings, parking, and paving once the project is complete.

5. Is it possible to develop your property without surpassing the grading thresholds requiring a Special Use Permit? (Explain fully your answer.)

   Yes, but the grading permit will be phased to proceed the building permit process for the Connect neighborhood center and community garden and on its own it triggers a Special Use Permit.

6. Has any portion of the grading shown on the plan been done previously? (If yes, explain the circumstances, the year the work was done, and who completed the work.)

   No

7. Have you shown all areas on your site plan that are proposed to be disturbed by grading? (If no, explain your answer.)

   Yes

8. Can the disturbed area be seen from off-site? If yes, from which directions and which properties or roadways?

Land disturbing activities will be visible from neighboring properties (including Hunsberger Elementary School, the Park at Arrowcreek, and single family residences located to the south) during construction. Once the building is complete then graded areas will no longer be visible.

9. Could neighboring properties also be served by the proposed access/grading requested (i.e. if you are creating a driveway, would it be used for access to additional neighboring properties)?

No

10. What is the slope (horizontal/vertical) of the cut and fill areas proposed to be? What methods will be used to prevent erosion until the revegetation is established?

3:1 maximum slopes are proposed and standard construction BMPs will be utilized until new landscaping is well established.

11. Are you planning any berms?

Yes	No X	If yes, how tall is the berm at its highest?

12. If your property slopes and you are leveling a pad for a building, are retaining walls going to be required? If so, how high will the walls be and what is their construction (i.e. rockery, concrete, timber, manufactured block)?

Only 4 foot tall landscape retaining walls are proposed with this project.

13. What are you proposing for visual mitigation of the work?

The building architecture complements natural site topography. In addition, landscaping will visually mitigate the site work.

14. Will the grading proposed require removal of any trees? If so, what species, how many and of what size?

No

15. What type of revegetation seed mix are you planning to use and how many pounds per acre do you intend to broadcast? Will you use mulch and, if so, what type?

The landscape plan has includes revegetation with plants (not seeds) and will use a mix of decomposed granite, rock, and mulch.

16. How are you providing temporary irrigation to the disturbed area?

Following construction, all disturbed areas will be covered by building or paving or landscaped with drip irrigation.

17. Have you reviewed the revegetation plan with the Washoe Storey Conservation District? If yes, have you incorporated their suggestions?

Coordination with the Washoe Storey Conservation District can be concurrent with the planning process.

18. Are there any restrictive covenants, recorded conditions, or deed restrictions (CC&Rs) that may prohibit the requested grading?

Yes	No X	If yes, please attach a copy.

Washoe County Treasurer
P.O. Box 30039, Reno, NV 89520-3039
ph: (775) 328-2510 fax: (775) 328-2500
Email: tax@washoecounty.us

Washoe County Treasurer
Tammi Davis

Account Detail

Back to Account Detail | Change of Address | Print this Page

CollectionCart

Collection Cart	Items	Total		
	0	$0.00	Checkout	View

Pay Online

No payment due for this account.

Washoe County Parcel Information

Parcel ID	Status	Last Update
15292101	Active	5/12/2020 2:09:49 AM

Current Owner:
SAGE PROPERTY VENTURES LLC

510 W 4TH ST
CARSON CITY, NV 89703

SITUS:
2500 CROSSBOW CT
WCTY NV

Taxing District
4000

Geo CD:

Tax Bill (Click on desired tax year for due dates and further details)

Tax Year	Net Tax	Total Paid	Penalty/Fees	Interest	Balance Due
2019	$642.45	$642.45	$0.00	$0.00	$0.00
2018	$613.04	$613.04	$0.00	$0.00	$0.00
2017	$588.33	$588.33	$0.00	$0.00	$0.00
2016	$588.75	$600.53	$0.00	$0.00	$0.00
2015	$588.42	$594.30	$0.00	$0.00	$0.00
				Total	$0.00

Disclaimer

- ALERTS: If your real property taxes are delinquent, the search results displayed may not reflect the correct amount owing. Please contact our office for the current amount due.
- For your convenience, online payment is available on this site. E-check payments are accepted without a fee. However, a service fee does apply for online credit card payments. See Payment Information for details.

Pay By Check

Please make checks payable to:
WASHOE COUNTY TREASURER

Mailing Address:
P.O. Box 30039
Reno, NV 89520-3039

Overnight Address:
1001 E. Ninth St., Ste D140
Reno, NV 89512-2845

Payment Information

Special Assessment District

Installment Date Information

Assessment Information

WASHOE COUNTY ASSESSOR PROPERTY DATA 5/12/2020

Owner Information

APN	**152-921-02**	Card 1 of 1
Situs 1	2540 CROSSBOW CT WASHOE COUNTY NV 89511	Bld #
Owner 1	SAGE PROPERTY VENTURES LLC	
Mail Address	510 W 4TH ST CARSON CITY NV 89703	

Parcel Info & Legal Description

Keyline Desc	PM 4892 LT 2		
Subdivision	_UNSPECIFIED		
	Section **Township** 18 **Range** 19		
Record of Survey Map : **Parcel Map#** 4892 : **Sub Map#**			
Special Property Code			
2020 Tax District	4000	**Prior APN**	152-020-52
2019 Tax District	4000	**Tax Cap Status**	NFM - Use does not qualify for Low Cap, High Cap Applied

Building Information

XFOB SUBAREA

Bld #1 Situs	2540 CROSSBOW CT	**Property Name**	
Quality		**Building Type**	
Stories		**2nd Occupancy**	
Year Built	0	**WAY**	0
Bedrooms	0	**Square Feet**	
Full Baths	0	**Finished Bsmt**	0
Half Baths	0	**Unfin Bsmt**	0
Fixtures		**Basement Type**	
Fireplaces	0	**Gar Conv Sq Feet**	0
Heat Type		**Total Garage Area**	0
2nd Heat Type		**Garage Type**	
Exterior Walls		**Detached Garage**	0
2nd Ext Walls		**Basement Gar Door**	0
Roof Cover		**Sub Floor**	
% Complete	0	**Frame**	
Obso/Bldg Adj	0	**Units/Bldg**	0
Construction Modifier		**Units/Parcel**	0

Land Information

LAND DETAILS

Land Use	140	**DOR Code**	140	**Sewer**	None	**Neighborhood**	ECFQ	EC Neighborhood Map
Size	46,739 SqFt	**Size**	1.073 Acres	**Street**	Unpaved	**Zoning Code**	LDS	
				Water	None			

Sales and Transfer Records

RECORDER SEARCH

Grantor	Grantee	Doc #	Doc Type	Doc Date	DOR Code	Value/Sale Price	Sale Code	Note
HELVETICA CTV CROSSBOW LLC	SAGE PROPERTY VENTURES LLC	4994104	DEED	01-23-2020	140	550,000	4MV	
ARROWCREEK CONSTRUCTION LLC	HELVETICA CTV CROSSBOW LLC	4317954	DEED	01-16-2014	140	125,000	3BGG	
SOUTHWEST POINTE ASSOC LLC	ARROWCREEK CONSTRUCTION LLC	4310983	DEED	12-20-2013	140	125,000	2MSV	

SOUTHWEST POINTE ASSOC LLC,	SOUTHWEST POINTE ASSOC LLC	3631884	PM	03-20-2008	140	0	3NTT	

Valuation Information The 2020/2021 values are preliminary values and subject to change.

	Taxable Land	New Value	Taxable Imps	OBSO	Tax Cap Value	Taxable Total	Land Assessed	Imps Assessed	Total Assessed	Exemption Value
2020/21 NR	283,939	0	0	0		283,939	99,378	0	99,379	0
2020/21 VN	283,939	0	0	0		283,939	99,378	0	99,379	0
2019/20 FV	273,423	0	0	0	81,666	273,423	95,698	0	95,698	0

If the property sketch is not available on-line you can obtain a copy by calling (775) 328-2277 or send an email to exemptions@washoecounty.us with 'Sketch Request' in the subject line. Please include the APN.

All parcel data on this page is for use by the Washoe County Assessor for assessment purposes only. The summary data on this page may not be a complete representation of the parcel or of the improvements thereon. Building information, including unit counts and number of permitted units, should be verified with the appropriate building and planning agencies. Zoning information should be verified with the appropriate planning agency. All parcels are reappraised each year. This is a true and accurate copy of the records of the Washoe County Assessor's Office as of 05-11-2020

If you have questions or corrections about our property data you can call us at 775-328-2277 or email us at exemptions@washoecounty.us

DRAINAGE REPORT

FOR

Connect Meditation Center

APN:
152-921-01 & 152-921-02

Prepared for:

Sage Property Ventures LCC.
175 Kingsrow Ct.
Reno, NV

Prepared by:

730 Sandhill Road, Suite 250
Reno, Nevada 89521

May 12th, 2020
Job Number: 20002

TABLE OF CONTENTS

GENERAL LOCATION AND DEVELOPMENT DESCRIPTION

INTRODUCTION

The following report represents the hydrologic and hydraulic analysis for the Connect Meditation Center which will be located on 1.82 acres of vacant land. The site is located at 2500 Crossbow Court and will be composed of two sites to be combined with APNs 152-921-01 & 152-921-02. This report will address the Truckee Meadows Regional Design Manual (TMRDM) & Washoe County Stormwater requirements including calculations and results to show how the project meets these requirements.

SITE LOCATION

The proposed project is located on two vacant parcels totaling 1.82 acres, with APNs 152-921-01 & 152-921-02. The parcel is bordered to the west by Crossbow Court, to the south by Arrowcreek Parkway, it is currently undeveloped to the east. The site is situated in the SE ¼ of the SW ¼ of Section 30, Township 18N, Range 20E, Mount Diablo Meridian. See Exhibit 1 for a general Vicinity Map.

PROJECT DESCRIPTION`

The projects scope includes the construction of a 13,215 SF community center building with a parking area and dive aisles connection to Crossbow court in two locations.

HYDROLOGIC ANALYSIS

In the existing condition the site consists of a single drainage basin as shown on Exhibit 2. The site currently slopes from south to north starting at an elevation of 5205' and having an elevation in the north of 5160'. The hydrologic analysis provided in this report includes calculations for the proposed development's 10-year and 100-year peak discharges. All calculations were performed in accordance with Washoe County Development Code and the Truckee Meadows Regional Design Manual (TMRDM).

According to Flood Insurance Rate Map panel 23031C3245G, dated March 16, 2009, the entire site is located within Unshaded Flood Zone X. Unshaded Flood Zone X is defined as an area of minimal flood hazard, determined to be outside the 500-year flood. A copy of the FEMA map is enclosed as Exhibit 3.

GENERAL DESCRIPTION OF ON-SITE FACILITIES

The proposed site will drain into detention basins with flow-controlled outlet structures. An existing channel located to the north of the site will serve as the detention basin outlet. The flow-controlled outlet structures are designed to limit post development flows to existing peak flows.

COMPLIANCE WITH REGULATIONS AND ADOPTED PLANS

The design criteria which has been used for this drainage analysis is in compliance with the Washoe County Storm Drainage Standards, Truckee Meadows Regional Drainage Manual & The Washoe County Boneyard Flat Closed Basin Interim Drainage Policy.

METHODOLOGY

RATIONAL METHOD

The rational method was used to determine the peak flows. The parameters for this method are:

1. The drainage area (A, acres)
2. Time of Concentration (T_c, minutes)
3. Runoff Coefficient (C)
4. Rainfall Intensity (i, inches per hour)

The time of concentration is calculated based on the Truckee Meadows Regional Drainage Manual equation:

$$tc = ti + tt$$

In which tc = time of concentration (minutes)
ti = initial, inlet, or overland flow time (minutes)
tt = travel time in the ditch, channel, gutter, storm sewer, etc. (minutes)

Due to the relatively small size of the site and sub areas and the high runoff potential within commercial developments, the minimum T_c of 10 minutes was used in this proposed sub-basin analysis.

Rainfall intensities were obtained from the rainfall intensity-duration-frequency curves for the project location as determined by NOAA. (See Appendix A)

From the Truckee Meadows Regional Drainage Manual., the following runoff coefficients were used (See Appendix A):

	5-yr	100-yr
Impervious	C=0.88	C=0.93
Building	C=0.85	C=0.87
Undeveloped/Landscaping	C=0.20	C=0.50

The peak runoff is calculated using the following equation: Q=CiA

PROPOSED DRAINAGE FACILITIES

FACILIITY DESIGN CALCULATIONS

The proposed site is composed of two drainage basins. Much of the site excluding the northern most section paving for the drive aisle is routed to detention basin with a flow-controlled outlet structure located along the eastern property line. The outlet from this basin and the remaining water from the drive aisle is routed to a basin located in the northern portion of the site. The roof drains for the buildings will all drain via downspout and sheet flow into this system. The site will finally drain into the existing channel located to the north of the site.

All Calculations have been provided in appendix B. A summary of these results is below in the provided tables.

BASIN SIZING

In order to account for the increased volume of runoff generated, as well as the flood plain storage volumes within the 100-year flood plain, a volumetric analysis was performed based on the 100-year, 10-day storm event. Basin sizing calculations are referenced in Appendix B.

Table 3 – Basin Sizing

	100 YR Required Volume (c.f.)	100 YR Provided Volume (c.f.)
Basin 1	1,018	1,200

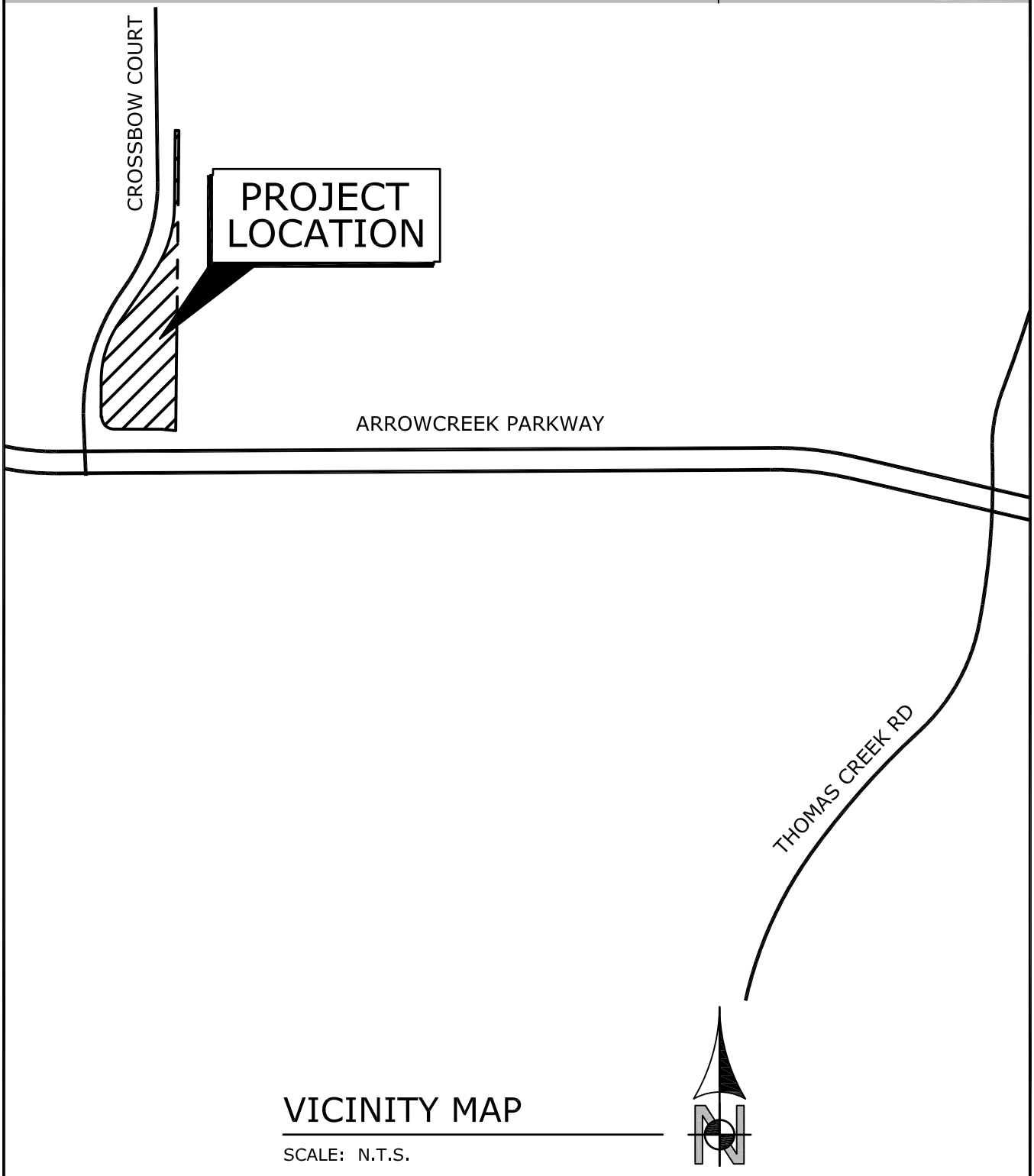
CONCLUSION

All designed storm drain facilities are effective in controlling storm runoff. In addition, the storm drain facilities are in compliance with the following:

- FEMA requirements - No buildings are proposed within the existing or proposed 100-year flood plain boundaries.
- Drainage Laws – As designed, the drainage system shall promote and preserve the general health, welfare, and economic being of the region.
- Washoe County Development Code – All items of concern such as reasonable use of and diversion of drainage have been addressed.
- All storm drain and flood control improvements have been designed to meet or exceed the design standards as set forth in the Washoe County Storm Drainage Standards & the Truckee Meadows Regional Drainage Manual
- Drainage facilities have been designed in order to ensure that post development flows do not exceed existing flows.

EXHIBITS

DRAWN: C.S.O.		DATE: 4/27/20
DESCRIPTION: VICINITY MAP	APN : 152-921-01 & -02	SUBMITTAL: EX-1



VICINITY MAP

SCALE: N.T.S.

PROJECT/CLIENT:

JOB #: 20002

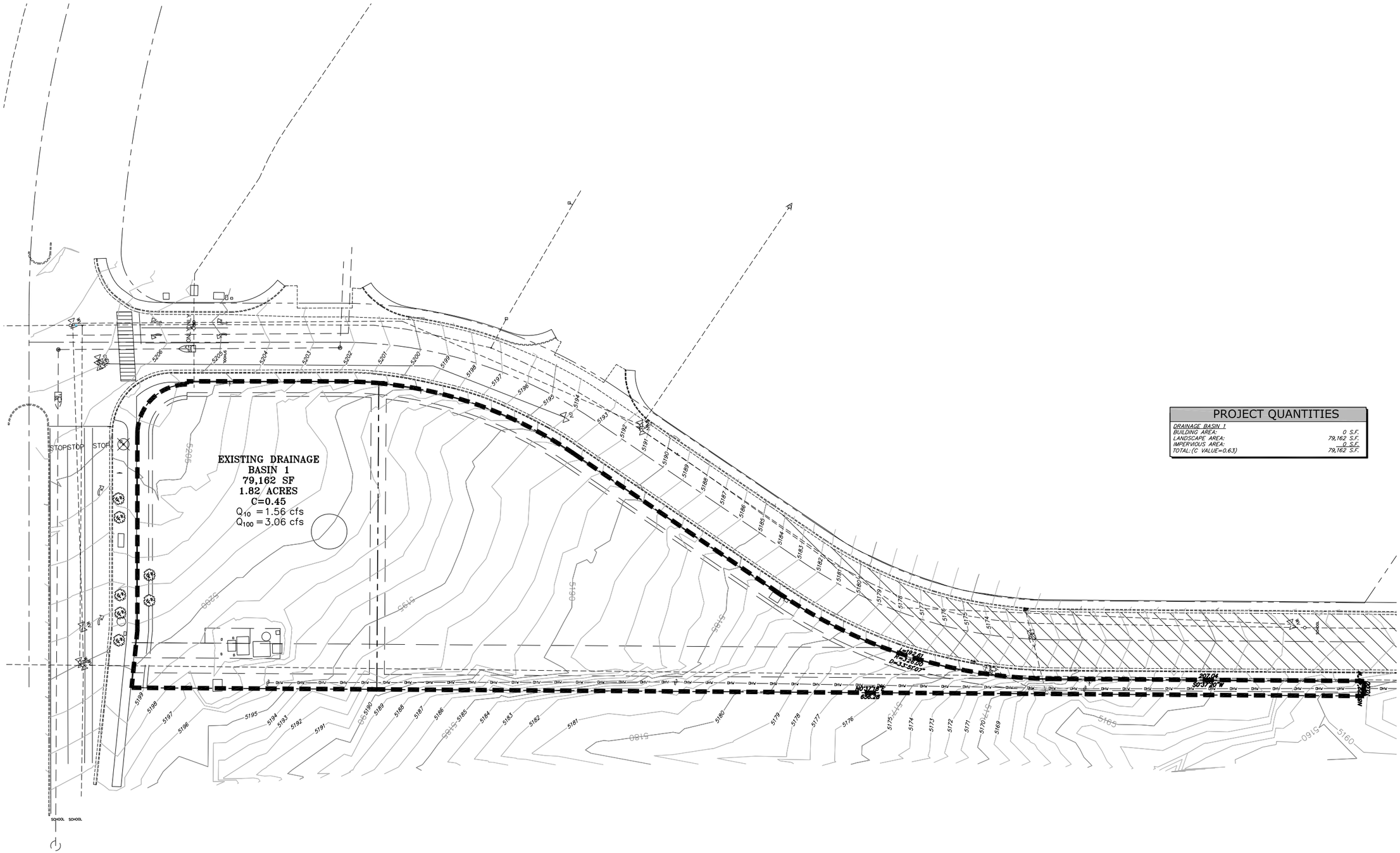
CONNECT MEDITATION CENTER

2500 CROSSBOW COURT

SAGE PROPERTY VENTURES LLC

175 KNIGHTSBRIDGE COURT
RENO, NV

TECTONICS DESIGN GROUP
730 Sandhill Road, Suite 250, Reno, NV 89521
www.tectonicsdesigngroup.com
tel 775-824-9988
fax 775-824-9986



PROJECT QUANTITIES	
DRAINAGE BASIN 1	
BUILDING AREA:	*0 S.F.*
LANDSCAPE AREA:	*79,162 S.F.*
IMPERVIOUS AREA:	*0 S.F.*
TOTAL: (C VALUE=0.63)	*79,162 S.F.*

2 DAYS BEFORE
YOU DIG CALL USA
TOLL FREE 1-800-227-2600

EXISTING BASIN MAP

SCALE: N.T.S.

STAMP:
DRAWN:
DESIGNED:
CHECKED/STAMPED:

DESIGNER:

TECTONICS DESIGN GROUP
10451 Double R Boulevard, Reno, NV 89521
www.tectonicsdesigngroup.com
tel 775-824-9988
fax 775-824-9986

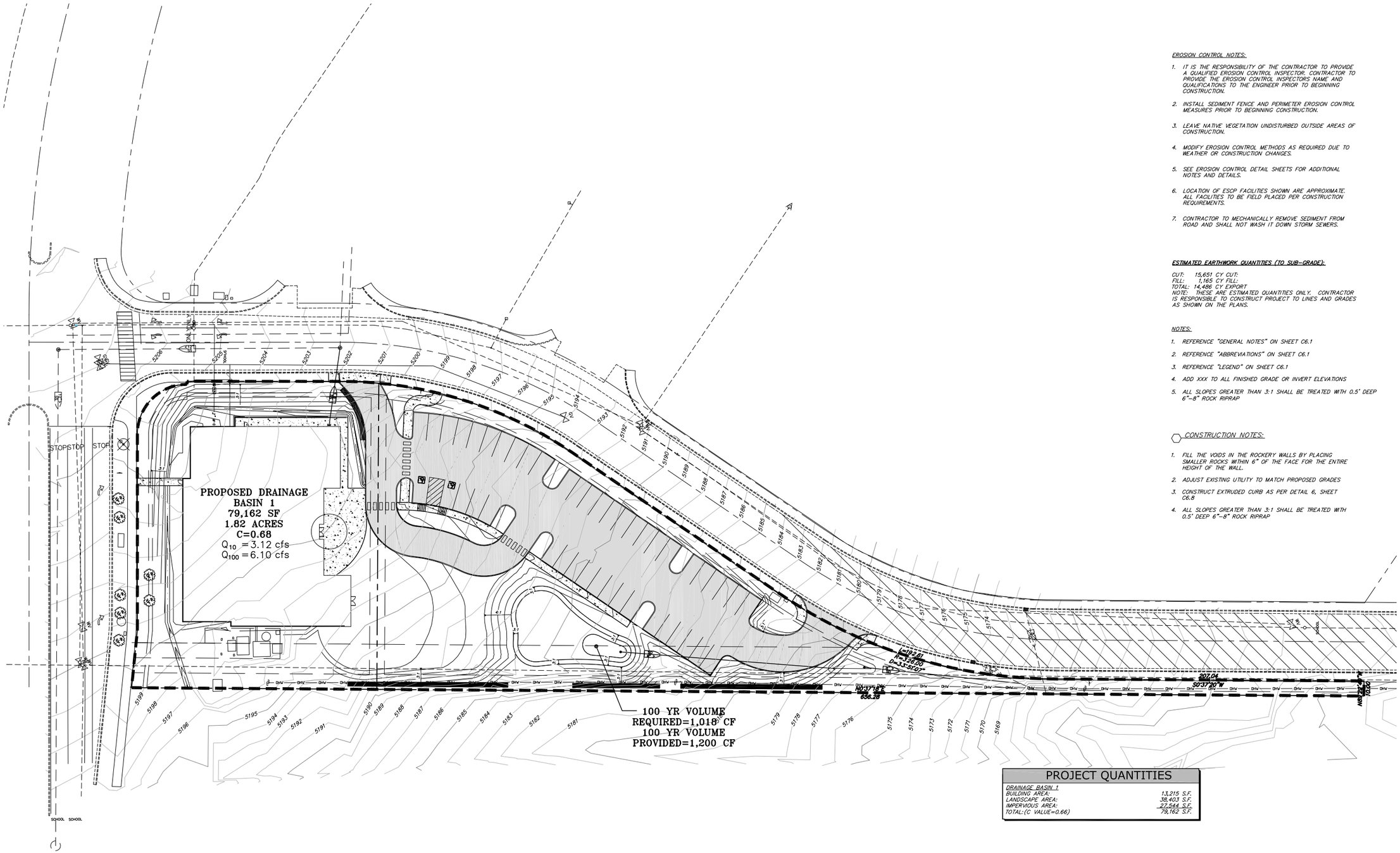
PROJECT/CLIENT:
Connect Meditation
Reno, NV
Sage property Ventures LLC
175 Knightsbridge Ct
Reno, NV

SUBMITTAL RECORD:

DATE:	SUBMITTAL
05/12/20	SUP

SHEET TITLE: EXISTING BASIN MAP

SHEET: EX-2



EROSION CONTROL NOTES:

1. *IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE A QUALIFIED EROSION CONTROL INSPECTOR. CONTRACTOR TO PROVIDE THE EROSION CONTROL INSPECTORS NAME AND QUALIFICATIONS TO THE ENGINEER PRIOR TO BEGINNING CONSTRUCTION.*
2. *INSTALL SEDIMENT FENCE AND PERIMETER EROSION CONTROL MEASURES PRIOR TO BEGINNING CONSTRUCTION.*
3. *LEAVE NATIVE VEGETATION UNDISTURBED OUTSIDE AREAS OF CONSTRUCTION.*
4. *MODIFY EROSION CONTROL METHODS AS REQUIRED DUE TO WEATHER OR CONSTRUCTION CHANGES.*
5. *SEE EROSION CONTROL DETAIL SHEETS FOR ADDITIONAL NOTES AND DETAILS.*
6. *LOCATION OF ESCP FACILITIES SHOWN ARE APPROXIMATE. ALL FACILITIES TO BE FIELD PLACED PER CONSTRUCTION REQUIREMENTS.*
7. *CONTRACTOR TO MECHANICALLY REMOVE SEDIMENT FROM ROAD AND SHALL NOT WASH IT DOWN STORM SEWERS.*

ESTIMATED EARTHWORK QUANTITIES (TO SUB-GRADE):

CUT: 15,651 CY CUT:
FILL: 1,165 CY FILL:
TOTAL: 14,486 CY EXPORT
NOTE: THESE ARE ESTIMATED QUANTITIES ONLY. CONTRACTOR IS RESPONSIBLE TO CONSTRUCT PROJECT TO LINES AND GRADES AS SHOWN ON THE PLANS.

NOTES:

1. *REFERENCE "GENERAL NOTES" ON SHEET C6.1*
2. *REFERENCE "ABBREVIATIONS" ON SHEET C6.1*
3. *REFERENCE "LEGEND" ON SHEET C6.1*
4. *ADD XXX TO ALL FINISHED GRADE OR INVERT ELEVATIONS*
5. *ALL SLOPES GREATER THAN 3:1 SHALL BE TREATED WITH 0.5' DEEP 6"-8" ROCK RIPRAP*

CONSTRUCTION NOTES:

1. *FILL THE VOIDS IN THE ROCKERY WALLS BY PLACING SMALLER ROCKS WITHIN 6" OF THE FACE FOR THE ENTIRE HEIGHT OF THE WALL.*
2. *ADJUST EXISTING UTILITY TO MATCH PROPOSED GRADES*
3. *CONSTRUCT EXTRUDED CURB AS PER DETAIL 6, SHEET C6.8*
4. *ALL SLOPES GREATER THAN 3:1 SHALL BE TREATED WITH 0.5" DEEP 6"-8" ROCK RIPRAP*

PROJECT QUANTITIES

DRAINAGE BASIN 1	
BUILDING AREA:	*13,215 S.F.*
LANDSCAPE AREA:	*38,403 S.F.*
IMPERVIOUS AREA:	*27,544 S.F.*
TOTAL:(C VALUE=0.66)	*79,162 S.F.*

2 DAYS BEFORE
YOU DIG CALL USA
TOLL FREE 1-800-227-2600

PROPOSED BASIN MAP

SCALE: N.T.S.

DRAWN:
DESIGNED:
CHECKED/STAMPED:

STAMP:

DESIGNER:
TECTONICS DESIGN GROUP
10451 Double R Boulevard, Reno, NV 89521
www.tectonicsdesigngroup.com
tel 775-824-9988
fax 775-824-9986

PROJECT/CLIENT:
Connect Meditation
Reno, NV
Sage property Ventures LLC
175 Knightsbridge Ct
Reno, NV

SUBMITTAL RECORD:

DATE:	SUBMITTAL
05/12/20	SUP

SHEET TITLE: PROPOSED BASIN MAP

SHEET: EX-3

National Flood Hazard Layer FIRMette

FEMA

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/29/2020 at 1:52:07 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

EX. 4

APPENDIX A

REGIONAL DRAINAGE CRITERIA

NOAA Atlas 14, Volume 1, Version 5
Location name: Reno, Nevada, USA*
Latitude: 39.4052°, Longitude: -119.7983°
Elevation: 5184.89 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**1.21** (1.04-1.43)	**1.52** (1.30-1.79)	**2.03** (1.73-2.40)	**2.52** (2.12-2.98)	**3.31** (2.72-3.96)	**4.04** (3.22-4.90)	**4.92** (3.78-6.04)	**5.98** (4.40-7.50)	**7.68** (5.30-9.92)	**9.24** (6.08-12.2)
10-min	**0.924** (0.792-1.09)	**1.16** (0.990-1.36)	**1.55** (1.31-1.83)	**1.91** (1.62-2.27)	**2.53** (2.08-3.01)	**3.08** (2.45-3.73)	**3.74** (2.87-4.59)	**4.55** (3.35-5.70)	**5.84** (4.04-7.56)	**7.03** (4.63-9.31)
15-min	**0.764** (0.656-0.900)	**0.956** (0.820-1.13)	**1.28** (1.09-1.51)	**1.58** (1.34-1.87)	**2.09** (1.72-2.49)	**2.55** (2.03-3.08)	**3.10** (2.38-3.79)	**3.76** (2.77-4.71)	**4.83** (3.34-6.24)	**5.81** (3.82-7.69)
30-min	**0.516** (0.442-0.606)	**0.644** (0.552-0.760)	**0.860** (0.732-1.02)	**1.07** (0.900-1.26)	**1.40** (1.15-1.68)	**1.72** (1.37-2.07)	**2.08** (1.60-2.55)	**2.53** (1.86-3.17)	**3.25** (2.25-4.21)	**3.91** (2.58-5.18)
60-min	**0.319** (0.274-0.375)	**0.398** (0.341-0.470)	**0.533** (0.453-0.630)	**0.659** (0.557-0.781)	**0.869** (0.715-1.04)	**1.06** (0.845-1.28)	**1.29** (0.991-1.58)	**1.57** (1.15-1.96)	**2.01** (1.39-2.60)	**2.42** (1.59-3.20)
2-hr	**0.212** (0.187-0.243)	**0.264** (0.233-0.302)	**0.336** (0.294-0.386)	**0.400** (0.345-0.459)	**0.496** (0.416-0.572)	**0.581** (0.476-0.681)	**0.679** (0.542-0.809)	**0.804** (0.620-0.992)	**1.03** (0.756-1.31)	**1.23** (0.874-1.62)
3-hr	**0.170** (0.152-0.192)	**0.212** (0.191-0.241)	**0.265** (0.236-0.300)	**0.308** (0.272-0.349)	**0.367** (0.319-0.419)	**0.419** (0.357-0.483)	**0.478** (0.400-0.559)	**0.560** (0.458-0.667)	**0.703** (0.558-0.884)	**0.835** (0.645-1.09)
6-hr	**0.121** (0.108-0.136)	**0.152** (0.135-0.171)	**0.187** (0.166-0.211)	**0.215** (0.190-0.243)	**0.251** (0.218-0.285)	**0.278** (0.239-0.318)	**0.305** (0.258-0.353)	**0.338** (0.280-0.396)	**0.389** (0.315-0.465)	**0.442** (0.351-0.551)
12-hr	**0.080** (0.071-0.090)	**0.101** (0.090-0.113)	**0.126** (0.112-0.142)	**0.146** (0.129-0.165)	**0.173** (0.151-0.197)	**0.193** (0.166-0.221)	**0.214** (0.181-0.248)	**0.235** (0.194-0.276)	**0.262** (0.211-0.314)	**0.284** (0.224-0.347)
24-hr	**0.052** (0.047-0.059)	**0.066** (0.059-0.074)	**0.083** (0.075-0.094)	**0.097** (0.087-0.110)	**0.117** (0.104-0.132)	**0.133** (0.117-0.150)	**0.149** (0.130-0.170)	**0.166** (0.143-0.191)	**0.190** (0.161-0.220)	**0.209** (0.174-0.245)
2-day	**0.031** (0.028-0.036)	**0.039** (0.035-0.045)	**0.050** (0.045-0.058)	**0.059** (0.052-0.068)	**0.072** (0.062-0.082)	**0.082** (0.071-0.094)	**0.092** (0.079-0.107)	**0.103** (0.087-0.122)	**0.119** (0.098-0.142)	**0.131** (0.106-0.159)
3-day	**0.023** (0.021-0.026)	**0.029** (0.026-0.033)	**0.038** (0.034-0.043)	**0.045** (0.040-0.051)	**0.055** (0.048-0.063)	**0.063** (0.055-0.072)	**0.072** (0.062-0.083)	**0.081** (0.069-0.095)	**0.095** (0.078-0.111)	**0.105** (0.085-0.126)
4-day	**0.019** (0.017-0.022)	**0.024** (0.022-0.028)	**0.032** (0.028-0.036)	**0.038** (0.034-0.043)	**0.047** (0.041-0.053)	**0.054** (0.047-0.062)	**0.062** (0.053-0.071)	**0.070** (0.059-0.081)	**0.082** (0.068-0.096)	**0.092** (0.075-0.109)
7-day	**0.013** (0.011-0.015)	**0.017** (0.015-0.019)	**0.022** (0.019-0.025)	**0.026** (0.023-0.030)	**0.032** (0.028-0.037)	**0.037** (0.032-0.043)	**0.042** (0.036-0.049)	**0.048** (0.040-0.056)	**0.056** (0.046-0.066)	**0.062** (0.051-0.074)
10-day	**0.010** (0.009-0.012)	**0.013** (0.012-0.015)	**0.017** (0.015-0.020)	**0.021** (0.018-0.024)	**0.025** (0.022-0.029)	**0.029** (0.025-0.033)	**0.033** (0.028-0.038)	**0.037** (0.031-0.043)	**0.043** (0.036-0.051)	**0.048** (0.039-0.057)
20-day	**0.006** (0.006-0.007)	**0.008** (0.007-0.009)	**0.011** (0.010-0.012)	**0.013** (0.011-0.015)	**0.016** (0.014-0.018)	**0.018** (0.016-0.020)	**0.020** (0.017-0.023)	**0.022** (0.019-0.026)	**0.026** (0.022-0.030)	**0.028** (0.023-0.033)
30-day	**0.005** (0.005-0.006)	**0.007** (0.006-0.007)	**0.009** (0.008-0.010)	**0.010** (0.009-0.012)	**0.012** (0.011-0.014)	**0.014** (0.012-0.016)	**0.016** (0.014-0.018)	**0.018** (0.015-0.020)	**0.020** (0.017-0.023)	**0.022** (0.018-0.026)
45-day	**0.004** (0.004-0.005)	**0.005** (0.005-0.006)	**0.007** (0.006-0.008)	**0.008** (0.007-0.009)	**0.010** (0.009-0.011)	**0.011** (0.010-0.012)	**0.012** (0.011-0.014)	**0.013** (0.012-0.015)	**0.015** (0.013-0.017)	**0.016** (0.014-0.019)
60-day	**0.003** (0.003-0.004)	**0.005** (0.004-0.005)	**0.006** (0.005-0.007)	**0.007** (0.006-0.008)	**0.008** (0.007-0.009)	**0.009** (0.008-0.010)	**0.010** (0.009-0.011)	**0.011** (0.009-0.013)	**0.012** (0.010-0.014)	**0.013** (0.011-0.015)

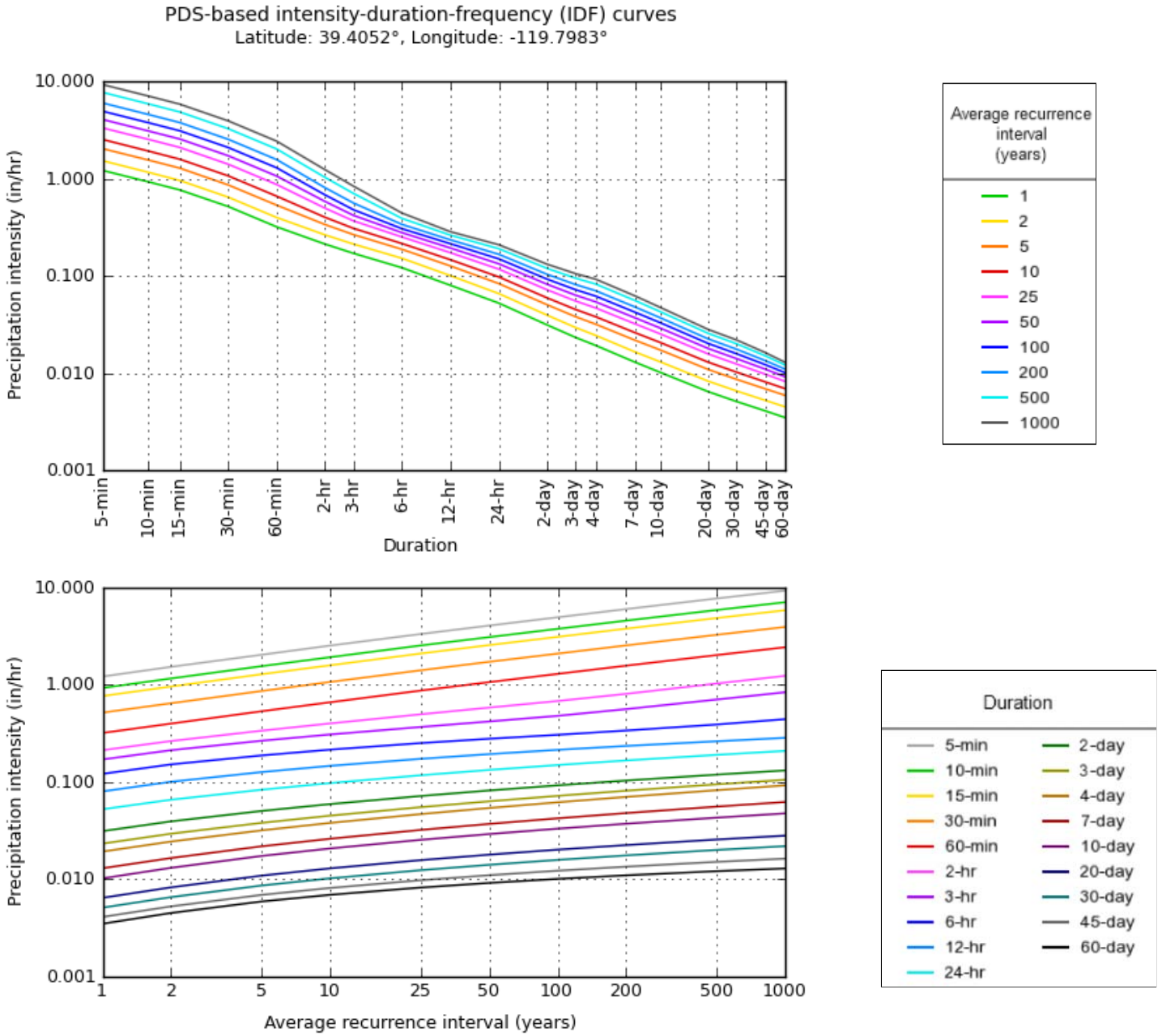
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Back to Top

PF graphical



NOAA Atlas 14, Volume 1, Version 5

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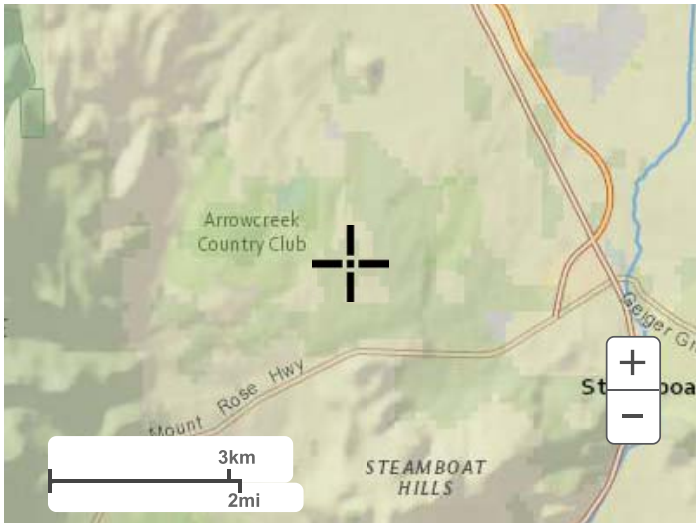
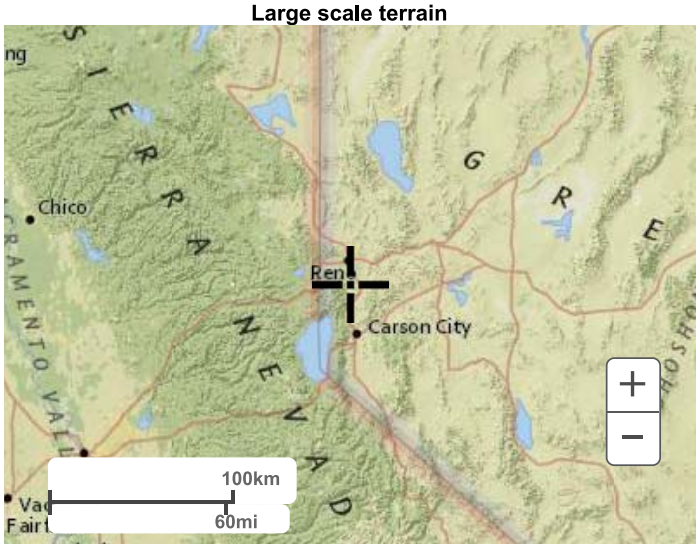
Back to Top

Maps & aerials

Small scale terrain



Large scale terrain



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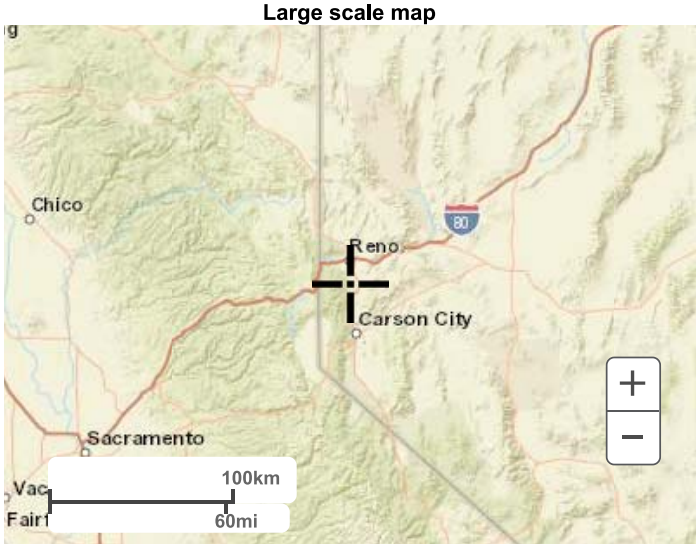
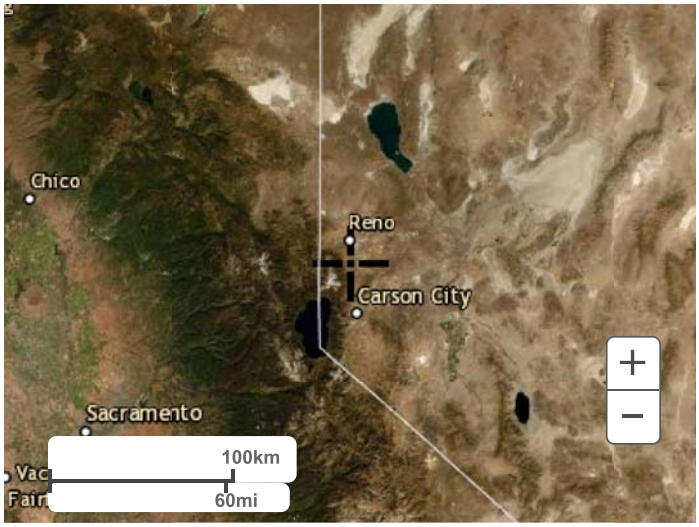


Large scale aerial



Back to Top

US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

APPENDIX B

DRAINAGE BASIN CALCULATIONS

Rainfall Intensity

Project: Connect Meditation Center
Project #: 20002

By: CSO
Date: 5/12/2020

Tc	I 5-YR	I 10-YR	I 25-YR	I 50-YR	I 100-YR
5	2.03	2.52	3.31	4.04	4.92
10	1.55	1.91	2.53	3.08	3.74
11	1.50	1.84	2.44	2.97	3.61
12	1.44	1.78	2.35	2.87	3.48
13	1.39	1.71	2.27	2.76	3.36
14	1.33	1.65	2.18	2.66	3.23
15	1.28	1.58	2.09	2.55	3.1
16	1.77	1.55	2.04	2.49	3.03
17	2.26	1.51	2.00	2.44	2.96
18	2.74	1.48	1.95	2.38	2.90
19	3.23	1.44	1.91	2.33	2.83
20	3.72	1.41	1.86	2.27	2.76
21	4.21	1.38	1.81	2.22	2.69
22	4.70	1.34	1.77	2.16	2.62
23	5.18	1.31	1.72	2.11	2.56
24	5.67	1.27	1.68	2.05	2.49
25	6.16	1.24	1.63	2.00	2.42
26	6.65	1.21	1.58	1.94	2.35
27	7.14	1.17	1.54	1.89	2.28
28	7.62	1.14	1.49	1.83	2.22
29	8.11	1.10	1.45	1.78	2.15
30	8.6	1.07	1.4	1.72	2.08
60	0.533	0.659	0.869	1.06	1.29
120	0.336	0.4	0.496	0.581	0.679

Existing Condition Runoff

Project: Connect Meditation Center **By:** CSO
Project #: 20002 **Date:** 5/12/2020

Tc
10

Acre
1.82

	Area (sf)	C
Building	0	0.9
Impervious	0	0.9
Pervious	79162	0.45

	C (comp)	Adj	C (adj)
100-yr	0.45	1	0.45
50-yr	0.45	1	0.45
25-yr	0.45	1	0.45
10-yr	0.45	1	0.45
5-yr	0.45	1	0.45

	Pre Development Peak Flows (cfs)				
Tc	5yr	10yr	25yr	50yr	100yr
10	1.27	1.56	2.07	2.52	3.06

	100-Yr		50-Yr		25-Yr		10-Yr		5-Yr	
T	Peak (cfs)	Volume (cf)	Peak (cfs)	Volume (cf)	Peak (cfs)	Volume (cf)	Peak (cfs)	Volume (cf)	Peak (cfs)	Volume (cf)
5	4.02	1611	3.30	1323	2.71	1084	2.06	825	1.66	665
10	3.06	2450	2.52	2018	2.07	1657	1.56	1251	1.27	1015
11	2.95	2543	2.43	2094	2.00	1719	1.51	1298	1.22	1053
12	2.85	2624	2.35	2160	1.93	1773	1.45	1339	1.18	1086
13	2.74	2692	2.26	2216	1.85	1818	1.40	1373	1.14	1114
14	2.64	2748	2.17	2261	1.78	1854	1.35	1401	1.09	1136
15	2.54	2791	2.09	2296	1.71	1882	1.29	1423	1.05	1152
16	2.48	2879	2.04	2369	1.67	1941	1.26	1468	1.45	1679
17	2.42	2960	1.99	2436	1.63	1995	1.24	1510	1.84	2253
18	2.37	3034	1.95	2497	1.60	2045	1.21	1548	2.24	2875
19	2.31	3101	1.90	2554	1.56	2090	1.18	1584	2.64	3544
20	2.26	3162	1.86	2605	1.52	2131	1.15	1615	3.04	4262
21	2.20	3216	1.81	2650	1.48	2167	1.13	1644	3.44	5028
22	2.15	3264	1.77	2690	1.45	2199	1.10	1669	3.84	5841
23	2.09	3305	1.72	2725	1.41	2226	1.07	1691	4.24	6703
24	2.03	3339	1.68	2754	1.37	2249	1.04	1710	4.64	7612
25	1.98	3366	1.63	2777	1.33	2267	1.01	1725	5.04	8569
26	1.92	3387	1.59	2796	1.30	2281	0.99	1737	5.44	9574
27	1.87	3401	1.54	2809	1.26	2290	0.96	1745	5.84	10627
28	1.81	3409	1.50	2816	1.22	2295	0.93	1751	6.23	11728
29	1.76	3410	1.45	2818	1.18	2295	0.90	1752	6.63	12876
30	1.70	3404	1.41	2815	1.14	2291	0.88	1751	7.03	14073
60	1.05	4010	0.87	3295	0.71	2701	0.54	2048	0.44	1657
120	0.56	4110	0.48	3516	0.41	3002	0.33	2421	0.27	2034

Proposed Condition Runoff

Project: Connect Meditation Center **By:** CSO
Project #: 20002 **Date:** 5/12/2020

Tc
5

Acre
1.82

	Area (sf)	C
Building	13215	0.9
Impervious	27544	0.9
Pervious	38403	0.45

	C (comp)	Adj	C (adj)
100-yr	0.6817	1	0.68
50-yr	0.6817	1	0.68
25-yr	0.6817	1	0.68
10-yr	0.6817	1	0.68
5-yr	0.6817	1	0.68

	Post Development Peak Flows (cfs)				
Tc	5yr	10yr	25yr	50yr	100yr
5	2.51	3.12	4.10	5.00	6.10

	100-Yr		50-Yr		25-Yr		10-Yr		5-Yr	
T	Peak (cfs)	Volume (cf)	Peak (cfs)	Volume (cf)	Peak (cfs)	Volume (cf)	Peak (cfs)	Volume (cf)	Peak (cfs)	Volume (cf)
5	6.10	2441	5.00	2004	4.10	1642	3.12	1250	2.51	1007
10	4.63	3246	3.82	2673	3.13	2196	2.37	1658	1.92	1345
11	4.47	3403	3.68	2802	3.03	2301	2.28	1737	1.85	1409
12	4.32	3541	3.55	2915	2.92	2393	2.20	1807	1.79	1466
13	4.16	3661	3.42	3013	2.81	2472	2.12	1867	1.72	1514
14	4.00	3761	3.29	3095	2.70	2538	2.04	1918	1.65	1554
15	3.84	3842	3.16	3161	2.59	2590	1.96	1958	1.59	1587
16	3.76	3983	3.09	3278	2.53	2685	1.92	2031	2.19	2323
17	3.67	4114	3.02	3386	2.48	2773	1.87	2099	2.79	3132
18	3.59	4235	2.95	3487	2.42	2855	1.83	2162	3.40	4013
19	3.50	4346	2.88	3579	2.36	2929	1.79	2219	4.00	4967
20	3.42	4447	2.82	3663	2.30	2997	1.75	2272	4.61	5993
21	3.33	4537	2.75	3738	2.25	3057	1.70	2319	5.21	7092
22	3.25	4618	2.68	3806	2.19	3111	1.66	2362	5.82	8264
23	3.17	4688	2.61	3865	2.13	3158	1.62	2399	6.42	9508
24	3.08	4748	2.54	3916	2.08	3199	1.58	2431	7.03	10825
25	3.00	4798	2.47	3959	2.02	3232	1.54	2459	7.63	12214
26	2.91	4838	2.41	3994	1.96	3258	1.49	2481	8.24	13676
27	2.83	4868	2.34	4020	1.91	3278	1.45	2498	8.84	15210
28	2.75	4888	2.27	4038	1.85	3291	1.41	2510	9.45	16817
29	2.66	4898	2.20	4048	1.79	3297	1.37	2517	10.05	18496
30	2.58	4897	2.13	4050	1.73	3296	1.33	2519	10.65	20248
60	1.60	5914	1.31	4859	1.08	3984	0.82	3021	0.66	2443
120	0.84	6141	0.72	5255	0.61	4486	0.50	3618	0.42	3039

Basin Size Estimate

Project: Connect Meditation Center **By:** CSO
Project #: 20002 **Date:** 5/12/2020

Pr Tc
5

Ex 100yr
3.06

	100-Yr		
Td	Peak (cfs)	Inflow (cf)	Storage (cf)
5	6.10	2441	911
10	4.63	3246	1018
11	4.47	3403	1018
12	4.32	3541	1000
13	4.16	3661	965
14	4.00	3761	911
15	3.84	3842	839
16	3.76	3983	813
17	3.67	4114	778
18	3.59	4235	732
19	3.50	4346	678
20	3.42	4447	613
21	3.33	4537	539
22	3.25	4618	455
23	3.17	4688	362
24	3.08	4748	259
25	3.00	4798	Qp<Qa
26	2.91	4838	Qp<Qa
27	2.83	4868	Qp<Qa
28	2.75	4888	Qp<Qa
29	2.66	4898	Qp<Qa
30	2.58	4897	Qp<Qa
60	1.60	5914	Qp<Qa
120	0.84	6141	Qp<Qa

April 21, 2020 Project No. RG-20-032

Mr. Matthew Rasmussen
Tectonics Design Group
10451 Double R Blvd.
Reno, Nevada 89521

Re: Geotechnical Investigation Report Update
Proposed Commercial Development
2500 Crossbow court
Reno, Washoe County, Nevada

Ref: Pezonella Associates, Inc., 2015, *Preliminary Geotechnical Investigation, Proposed Commercial Development, Arrowcreek Parkway and Crossbow Court, Reno, Nevada,* 28 pages, Job No. 6098.14-A.

Dear Mr. Rasmussen:

Nova Geotechnical and Inspection Services (NOVA) is pleased to present the results of our update to the referenced geotechnical investigation report by Pezonella Associates, Inc. (PEZ, the Report). The project is located at 2500 Crossbow Court in the City of Reno, Washoe County, Nevada. According to the Public Land Survey System (PLSS), the site is situated in the SE ¼ of the SW ¼ of Section 30, Township 18N, Range 20E, Mount Diablo Meridian, and is identified as Assessor's Parcel Numbers (APN's) 152-921-01 and -02. The site comprises approximately 1.817 acres. The purpose of our services is to provide updated and/or revised geotechnical engineering recommendations, following the 2018 International Building Code (IBC), to aid in the design and development of the project.

Our current scope of services for this report update consists of the following:

- A site reconnaissance
- A review of the Report
- A review of the new conceptual site plan
- Provide any updated recommendations in this report

This report is geotechnical in nature and not intended to identify other site constraints such as environmental hazards, wetlands determinations or the potential presence of buried utilities. Recommendations included in this report are specific to development at the site and are not intended for any off-site development.

It is our opinion that, except as noted below, the conclusions and recommendations contained in the referenced report remains valid.

Project Information

Our project information is based on conversations with you, an undated conceptual site plan provided by you, and the Report. The project site consists of two parcels located at 2500 and 2450 Crossbow Court, in the City of Reno, Washoe County, Nevada. The Washoe County Assessor's parcel numbers (APN's) are 152-921-01 and 152-921-02, and the site comprises a total of approximately 1.82 acres. According to the Public Land Survey System (PLSS), the site is situated in the SE ¼ of the SW ¼ of Section 30, Township 18N, Range 20E, Mount Diablo Meridian.

Based on the referenced conceptual site plan, proposed improvements to the site consist of a two-story commercial building with a 10,500-sf footprint, with associated asphalt-paved parking and drives, exterior flatwork, landscaping, and underground utilities.

Site Reconnaissance

We performed a site reconnaissance on April 8, 2020. We observed the following:

- Stockpiles of soil, cobbles, boulders, and construction debris located north of the proposed structure footprint, and beneath a proposed entry drive
- Older fill located in the proposed parking area north of the structure
- Newer gravel fill placed over most of the south parcel
- An undocumented fill slope located along the east site boundary composed of debris and non-standard fill.

Since the date of the Report, 2015, there have been few changes to the project site. Our site reconnaissance did not reveal any new geotechnical issues.

Report Review

The Report includes the following conclusions and recommendations:

- Previously placed fill was encountered in the test borings to depths of 1 to 2 feet below existing grade (BEG).
- Native soils consist primarily of dense to very dense, moist silty sand and silty sand with gravel (SM).

- Groundwater was not encountered to the maximum explored depth of 15 feet BEG. Based on State of Nevada Division of Water resources drilling logs from nearby water wells, groundwater is anticipated to be approximately 300 feet beneath the surface.
- The potential for liquefaction is considered low.
- Recommended extending footings below existing fill to native soil below (1 to 3 feet BEG), scarifying the exposed native subgrade soil to a depth of six inches, and compacted to at least 90 percent relative compaction, based on ASTM D1557.
- Gives an allowable bearing capacity of 3,000 pounds per square foot (psf), with a one-third increase for total design loads.

The Report also states, "The recommendations presented in this report are based on the assumption that sufficient field inspection and construction review will be provided during all phases of construction. A pre-job conference should be scheduled to include, but not be limited to, the Owner, Architect, Civil Engineer, General Contractor, Earthwork and Materials Sub-Contractors, Building Official, and Geotechnical Engineer."

Discussion and Recommendations

A copy of the Report is attached to this update. The following updated recommendations replace those in the Report and should be incorporated during design and construction:

Site Preparation

The fill slope located along the east site boundary should be evaluated. Please contact this office for more information.

Site Class

The 2018 International Building Code (IBC) requires assuming a default Site Class of D for seismic design when soil conditions for the top 100 feet are not known in enough detail for determination in accordance with Table 20.3-1 of ASCE Standard 7-16.

Seismic Design Parameters

We obtained the site seismic design parameters using the ATC Hazards by Location website. This application is a third-party graphical user interface (GUI) utilizing the USGS seismic design maps and is used for determining seismic design values according to ASCE 7-16 and the 2018 International Building Code. Design parameters are presented in the following Table 1:

TABLE 1 2018 IBC SEISMIC DESIGN PARAMETERS	
Description	**Value**
Latitude	39.405266 deg
Longitude	-119.799025 deg
Site Class	D – Stiff Soil
Risk Category	II
Short-Period (0.2 sec) Spectral Response, S_S	2.039 g
Long-Period (1.0 sec) Spectral Response, S_1	0.722 g
Short-Period (0.2 sec) Site Coefficient, F_A	1.000
Long-Period (1.0 sec) Site Coefficient, F_V	* null
Short (0.2 sec) MCE Spectral Response, S_{MS}	2.039 g
Long (1.0 sec) MCE Spectral Response, S_{M1}	* null
Short (0.2 sec) Design Spectral Response, S_{DS}	1.359 g
Long (1.0 sec) Design Spectral Response, S_{D1}	* null
MCE_G Peak Ground Acceleration, *PGA*	0.890 g
Seismic Design Category, *SDC*	* null

NOTE *null: The Structural Engineer shall determine these values in accordance with ASCE 7-16, Section 11.4.8, Exception 2.

Closing

Our professional services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical engineers practicing in this or similar localities. No warranties, either express or implied, are intended or made. We prepared this report as an aid in design of the proposed project. This report is not a bidding document. Any contractor reviewing this report must draw their own conclusions regarding site conditions and specific construction techniques to be used on this project.

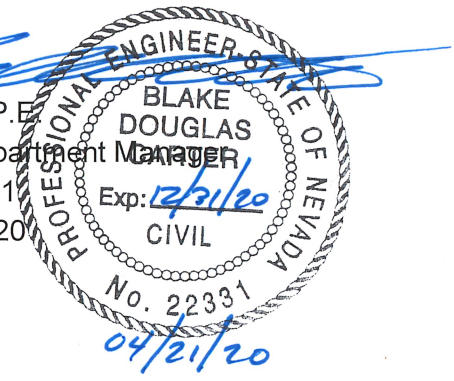
NOVA GEOTECHNICAL & INSPECTION SERVICES

Prepared by:

Joseph E. McKinney, PGp, PG
Senior Project Manager

Reviewed by:

Blake D. Carter, P.E.
Geotechnical Department Manager
RE Number 22331
Expires 12/31/2020



APPENDIX

Previous reports by Pezonella and Associates (2015)

PRELIMINARY GEOTECHNICAL INVESTIGATION

PROPOSED COMMERCIAL DEVELOPMENT

ARROWCREEK PARKWAY AND CROSSBOW COURT

RENO, NEVADA

Prepared For

Mr. Matthew Rasmussen
Tectonics Design Group
10451 Double R Blvd
Reno, Nevada 89521

Job No. 6098.14-A

December 18, 2015

Pezonella Associates, Inc.
Consulting Engineers and Geologists
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Pezonella Associates, Inc.
Geotechnical & Environmental Engineers & Geologists
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FAX • (775) 856-6042
www.pezonella.com

December 18, 2015
Job No: 6098.14-A

Mr. Matthew Rasmussen
Tectonics Design Group
10451 Double R Blvd
Reno, Nevada 89521

Re: **Preliminary Geotechnical Investigation**
Commercial Development
Arrowcreek Parkway and Crossbow Court, Reno, Nevada

Dear Mr. Rasmussen,

This report presents the results of our preliminary geotechnical investigation and provides recommendations for the design and construction of the referenced project.

As presented in the attached report, based on the results of our investigation, knowledge of the area; and understanding of project, we conclude that, the site is suitable from a geotechnical standpoint for the intended use provided the recommendations provided in this report are followed during all aspects of project planning and development.

No grading plans detailed develop plans have been provided at the time of this report. Once plans are completed, this report should be updated as necessary. Additional field and laboratory work may be required.

We appreciate having been selected to perform this investigation and trust that the results will fulfill project design requirements. If you, or any of your design consultants, have any questions, please contact us.

Respectfully,
PEZONELLA ASSOCIATES, INC.

Dean R. Stanphill, P.E.

Raymond M. Pezonella, President

RMP/drs

PROFESSIONAL ENGINEER-STATE OF NEVADA
DEAN R. STANPHILL
Exp 6-30-16
CIVIL
No. 13546
12-18-15

PROFESSIONAL ENGINEER-STATE OF NEVADA
RAYMOND M. PEZONELLA
Exp: 12-31-15
CIVIL
No. 4186
12-18-15

PRELIMINARY GEOTECHNICAL INVESTIGATION

PROPOSED COMMERCIAL DEVELOPMENT

ARROWCREEK PARKWAY AND CROSSBOW COURT

RENO, NEVADA

Prepared For

Mr. Matthew Rasmussen
Tectonics Design Group
10451 Double R Blvd
Reno, Nevada 89521

By

Dean R. Stanphill, P.E.

Raymond M. Pezonella, President

Pezonella Associates, Inc.
520 Edison Way
Reno, Nevada 89502
(775) 856-5566

December 18, 2015

Job No. 6098.14-A

TABLE OF CONTENTS

PEZONELLA ASSOCIATES, INC.
520 Edison Way
Reno, NV 89502

I INTRODUCTION

This report presents the results of our geotechnical investigation performed on the property located in Reno, Nevada. The location of the site is indicated on the Site Plan, Plate 1.

At the present time, we have not been provided with site grading or detailed development plans. It is important that as building and grading plans are finalized that they be reviewed by this office to verify that the recommendations contained herein remain applicable to the final project design. Although earthwork at the site is expected to be minimal, a comprehensive grading plan review and update of the geotechnical report is still recommended.

Site Description

Our site description is based on our observations and property boundaries provided by you.

The property consists of APN 152-921-01 and APN 152-921-02. Both properties are vacant and undeveloped.

The lots are bounded by vacant undeveloped property to the east, Crossbow Court to the west and north, and Arrowcreek Parkway to the south. An electrical transformer is located at the southeastern edge of the property. The property has been graded in the past. The lots contain approximately 1 to 2 feet fill material. This material is silty sand with gravel, and is aggregate base or rejected base in appearance. A stockpile of fill material is located on APN 152-921-01. An overhead utility line exists along the eastern edge of the lots, while a chain link fence continuously runs from the southeastern edge of the property to the northern edge of the property.

There was zero vegetation on the lots.

On the western side of Crossbow Court exists Hunsberger Elementary School. This school is opposite the entire western edge of the site.

Proposed Development

The preliminary plan provided by you indicates that the commercial development will consist of a two new buildings and parking lots. These structures will be comprised of two 6,000 square foot buildings, parking lots, and landscaping.

As mentioned, detailed development plans have not been provided to us at this time. Accordingly, we assume that construction will be concrete/masonry with shallow spread concrete footings, reinforced concrete slab-on-grade for the buildings, and asphalt concrete for the parking lots. Earthwork is expected to minimal. Structural loads are anticipated to be light to moderate.

It is anticipated that exterior concrete flatwork will complete the site work.

PEZONELLA ASSOCIATES, INC.
520 Edison Way
Reno, NV 89502

Scope of Services

The purpose of our investigation is to determine the subsurface soil and ground water conditions at the proposed building site and to provide opinions and recommendations concerning:

1. Estimated Soil Profile Type;
2. Groundwater;
3. Potential Geological Hazards;
4. Site Preparation;
5. Fill Placement and Compaction;
6. Site Surface Drainage and Landscape;
7. Trench Excavation, Pipe Bedding, and Trench Backfilling;
8. Foundation Support;
9. Lateral Resistance and Loads;
10. Exterior Concrete Flatwork;
11. Corrosion;
12. Pavement Sections;
13. Additional Geotechnical Engineering Services.

This report is geotechnical in nature and not intended to identify other site constraints such as environmental hazards, wetlands determinations and/or the potential presence of buried utilities. Recommendations included in this report are specific to development within the limits of the property and not intended for off-site development. Proposed development outside the limits of our investigation or any conceptual changes to site development, such as the use of alternative foundations or grade changes, could require additional subsurface exploration, laboratory tests and engineering analysis.

It must also be understood that because detailed development and grading plans have not been prepared, the recommendations presented herein are subject to change based on new conditions that may result of specific project design.

II FIELD EXPLORATION AND LABORATORY TESTING

Field Exploration

Soil Borings

Subsurface soil conditions were explored on November 24, 2015 by drilling four test borings with a truck mounted Central Mine Equipment (CME 55) drill rig using hollow-stem and solid flight augers to depths of 5.5, 5, 13.5, and 15 feet below the existing ground surface. All test borings were terminated in dense granular materials.

The test boring locations were positioned in the field using pacing and are depicted on Plate 2. Our field geologist recorded the location of each boring using the Global Positioning System (GPS). All locations are approximate. No greater accuracy is inferred.

Within the test borings, bulk and relatively undisturbed drive samples were obtained in the soil borings. Relatively undisturbed samples were obtained using a Modified California Sampler. Standard Penetration Tests (SPT's) were also performed a selected locations. The samples

PEZONELLA ASSOCIATES, INC.
520 Edison Way
Reno, NV 89502

were obtained utilizing a 140 pound hammer with a 30 inch drop. The blows for each 6 inch increment was recorded and converted to blows per foot and area as shown on the Logs of Test Borings. The blow counts presented on the aforementioned logs have not been corrected for sampler type, overburden, hammer type, or rod length. Materials encountered were visually classified and logged by our geologist and staff engineer.

Logs of the test pits and test borings are presented on Plates 3 through 6. The materials are classified in accordance with the Unified Soil Classification System which is explained on Plate 7.

Laboratory Testing

The samples were returned to our laboratory and reviewed by our staff engineer to confirm their field classifications and to select representative samples for laboratory testing. Index tests were performed which were in turn correlated with typical engineering design parameters for similar soils. The following tests were performed:

- Particle size analysis and Atterberg Limits (Plates 8 through 10),
- Corrosion test results (Plate 11).

III SUBSURFACE SOILS and GROUNDWATER CONDITIONS

Soils

Previously placed fill was encountered in our test boring. The existing fill material was encountered between depths of 1 to 2 feet beneath the existing elevations.

Native soils consist primarily of silty sand, and silty sand with gravel. It is anticipated that at the depths of the expected cuts, that silty sand with gravel will be encountered.

The soils encountered were generally in a moist condition.

Based on our field observations and laboratory evaluations, the on-site soils should be able to be excavated with conventional grading equipment.

Groundwater

At the time of our exploration in November, 2015, ground water was not encountered to the maximum depth explored of 15 feet.

A review of State of Nevada Division of Water Resources was conducted to locate the depth of groundwater near the site. The registered wells near the proposed development range in depths of 100 to 500 feet, with the closest well to the site as a depth of 300 feet beneath existing ground level.

Depths to groundwater may vary significantly over time due to seasonal precipitation and snow fall/melt that may significantly affect surface and near water seepage. Provisions should be made during construction to manage surface and subsurface water flows. Moreover, subsurface wall and concrete slab drainage systems should be incorporated into project design.

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IV GEOLOGIC AND SEISMIC CONSIDERATIONS

To delineate possible faulting and to evaluate any other geological hazards on the site, our investigation included a review of available geological literature.

A. Geology

Based on geologic mapping completed by H.F. Bonham Jr. and David K. Rogers (Nevada Bureau of Mines and Geology, *Mt. Rose NE Quadrangle Geologic Map*, 1983), the materials in the general site vicinity are composed of the following:

> Quaternary age Donner Lake Outwash-Mount Rose Fan Complex (Qdm). Pediment and thin fan deposits from major streams draining alpine glaciers on Mount Rose; brown to brownish-gray, sandy, muddy, poorly sorted large pebble gravel; cobbles and small boulders common. Clasts dominantly volcanic (porphyritic andesite and latite); surface granitic clasts rare. Deeply weathered, strongly developed soil profile similar to Donner Lake Outwas (Qdo), locally overlain by undifferentiated veneer of Tahoe Outwash-Mount Rose Fan Complex (Qtm); well cemented and/or hydrothermally altered in Steamboat Hills area.

B. Faulting and Seismicity

Faulting

Based on a review of the Nevada Bureau of Mines and Geology, *Mt. Rose NE Quadrangle Earthquake Hazards Map*, by Gail Cordy Szecsody in 1983, an Early to mid-Pleistocene (approximately 100,000 to 1,800,000 years) fault exists on the site, and a Mid-to late Pleistocene (approximately 35,000 to 100,000 years) exists approximately 0.5 miles southwest of the planned development. The reference map also describes the site as follows:

> Potential for Ground Shaking during Earthquakes (III): Moderate severity of shaking. Includes units from (II) where depth to ground water is >10m (33ft); also includes unconsolidated to moderately indurated deposits with moderately high rigidity where depth to ground water is less than 3m (10ft).

Because of the age of the fault and thickness of alluvium overlying the fault, no other mitigation measures are considered necessary.

The site is subject to pronounced slumping and ground disturbance and may manifest amplified ground motion during a seismic event. The project site is in an area of anticipated strong ground shaking, as is most of California and Nevada.

Seismicity

Based on our site investigation and information provided by the United States Geologic Service, the seismic coefficients for the site applicable to the 2012 International Building Code are as follows:

S_S = 2.297 g $\qquad$ S_1 = 0.799 g

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Site Classification
Based on our test borings and seismic lines, a Site Classification of D can be used for design.

C. Seismically-induced Liquefaction

Liquefaction, a loss of soil shear strength, is a phenomenon associated with loose, saturated granular deposits subjected to earthquake shaking which can result in unacceptable settlements of foundations and other structural elements supported by these soils. Due to the previously mentioned groundwater depths and the dense nature of the soils, the potential for seismically-induced liquefaction is considered low.

D. Tsunami or Seiche

A tsunami, or a seiche, is a great wave produced by an earthquake or volcanic activity. The difference between a tsunami and a seiche is that a seiche happens in enclosed bodies of water. Based on no body of water near the site, the potential for seiches is considered nil.

E. Radon

Radon, a colorless, odorless, radioactive gas derived from the natural decay of uranium, is found in nearly all rocks and soils. The Environmental Protection Agency (EPA) suggests that remedial action be taken to reduce radon in any structure with average indoor radon of 4.0 pCi/L or more. Based on studies completed by the Nevada Bureau of Mines and Geology in cooperation with the Nevada Division of Health and the U.S. Environmental Protection Agency (*Radon In Nevada*, Nevada Bureau of Mines and Geology, Bulletin 108, 1994), most areas of Northern Nevada have the potential for exceeding this active level. Our office can be of assistance if radon testing is requested.

F. Flooding

The site exists in the Federal Emergency Management Agency (FEMA), Community - Panel Number 32031C3245G, effective March 16, 2009. The site is classified as Flood Hazard Zone X (unshaded) which are areas determined to be outside the 0.2% annual chance floodplain.

V CONCLUSIONS

Based on the results of our test borings, laboratory testing, and engineering evaluations, it is our opinion that the subject site is suitable for development, provided the recommendations presented in this report and subsequent reports are adhered to during the design and construction phases of the project. The primary geotechnical constraint identified is the presence of undocumented fill materials.

VI RECOMMENDATIONS

A. Site Preparation

A portion of the on-site materials consist of undocumented fill material. It is our opinion, however, that due to the granular nature of the fill materials, removal is not necessary and the soils can be adequately compacted by large vibratory equipment.

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Reno, NV 89502

It is anticipated that the native soils will consist of silty sand with gravel at finished subgrade elevations which will be between 1 and 3 feet below the existing ground surface. Accordingly, we recommend that overexcavation be extended to provide the following zone of non-expansive properly compacted fill beneath structural elements:

- Footings and Interior Concrete Pavements/Slabs: underlain by properly compacted native subgrade;
- Exterior Concrete Flatwork: underlain by at least 6 inches of properly compacted native subgrade.

After overexcavation, subgrade soils should be scarified to a depth of 6 inches, moisture conditioned to optimum moisture content and then compacted to at least 90 percent relative compaction, based on the maximum dry density determined by ASTM D1557.

Scarification and moisture conditioning may be waived by the Geotechnical Engineer (or his representative) if it is determined that the exposed materials exist at a suitable moisture content for attaining compaction or contain oversize material which will inhibit compaction procedures and result in a lesser density state. Surfaces which contain oversize material should be "proof-rolled" under the observation of the Geotechnical Engineer (or his representative) to ensure that adequate compaction has been attained. The Earthwork Contractor is responsible for obtaining approval for each prepared surface prior to proceeding with placement of structural components or fills.

B. Fill Placement and Compaction

Suitability of On-site Soils

The on-site soils are considered suitable for use as properly compacted fill, provided the soils meet the criteria in this report. Soils excavated during construction that do not meet the criteria should be removed off-site.

Fill Material Specifications

Import soils used as properly compacted fill should be free of organic matter and conform to the following requirements:

TABLE 1
IMPORT FILL SOIL REQUIREMENTS

Sieve Size	% Passing (by dry weight)
6-inch	100
3/4-inch	70 – 100
No. 4	50 – 100
No. 200	15-40

Liquid Limit = 40 maximum
Plasticity Index = 15 maximum
R-Value = 30 minimum
Non-deleterious to concrete (low sulfate)

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Reno, NV 89502

If the earthwork contractor chooses to use the on-site material as structural backfill, the Geotechnical Engineer, or his representative, must be on-site to approve the material.

The Earthwork Contractor shall ensure that all proposed fill materials are approved by the Geotechnical Engineer prior to use. Representative samples shall be made available for testing 10 working days prior to hauling to allow for material quality tests.

Fill Placement

All properly compacted fill should be uniformly moisture conditioned to near optimum and compacted to at least 90 relative compaction, based on the maximum dry density determined by ASTM D1557. Lift thickness will be restricted to 8 inches (maximum loose lift) and individually tested unless the Earthwork Contractor can demonstrate his ability to uniformly achieve the required compaction for the entire layer placed.

The recommendations for structural fill are intended as a guideline and define a readily attainable, acceptable material. Adjustments to the specified limits to address the use of other potentially acceptable materials, such as those containing oversize rock or which deviate from the classification requirements, can be made provided: 1) the Earthwork Contractor can demonstrate his ability to place and compact the material in substantial conformance with industry standards to achieve an equivalent finished product as that specified; 2) the Geotechnical Engineer gives his written approval (requires a minimum of 5 working days from request); 3) the Geotechnical Engineer (or his representative) directly observes and approves the placement method; and 4) all parties understand that the Standard ASTM Compaction Test procedures may be invalid for certain material containing oversize aggregate. Compaction approval could only be achieved based on other criteria, such as a performance specification with full-time on-site observation. This will result in substantial increase of Technician time and the subsequent the cost of inspection services.

C. Site Surface Drainage and Landscape

Adequate drainage (at least 2 percent for soil) should be provided to restrict infiltration from entering the supporting soils. The ground surface should be permanently sloped to drain away from the structure so that the water is not allowed to pond against perimeter stem walls. Runoff from roof downspouts should be contained and directed away from the structure. Landscape adjacent to structural areas should be limited and consist of native vegetation utilizing drip-type irrigation.

Backfill around foundation stem walls should consist of native soils, moisture conditioned to near optimum, and compacted to 90 percent relative compaction. To control water migration, an impermeable membrane such as Mirafi coated fabric (MCF-1212 or equal) or 10 mil plastic layer should be considered between stem walls and material used as backfill and extend a sufficient distance to effectively cover all placed backfill.

D. Trench Excavation, Pipe Bedding and Trench Backfilling

The Earthwork Contractor must comply with the "Safety and Health Regulations for Construction" as directed by the Occupational Safety and Health Act (OSHA Standards, Volume III, Part 1926, Subpart P) while excavating and backfilling. The Earthwork Contractor is also responsible for providing a competent person, as defined by OSHA standards, to ensure excavation safety.

Pipe bedding and trench backfill materials should be moisture conditioned to slightly over optimum and compacted to 90 percent relative compaction, or local requirements, based on the maximum dry density determined by ASTM D1557. The thickness of all lifts will be restricted to a maximum of 8 inches (loose) and individually tested unless the Earthwork Contractor can demonstrate his ability to uniformly achieve the required compaction for the entire layer of material placed.

For corrosion protection, where steel and/or metal pipes are proposed, we recommend that the Contractor follow the pipe manufacturer's recommendation regarding corrosion protection.

E. Foundation Support

Conventional spread foundations should be supported on properly compacted fill meeting the requirements of "Table 1, Import Fill Soil Requirements".

All exposed subgrade soils in the footing excavations should be compacted to a minimum of 90 percent relative compaction based on the maximum dry density determined by ASTM D1557.

In preparation for foundation construction, the Earthwork Contractor shall ensure that the structural fills have been prepared as recommended and that field density tests have been performed to document the relative compaction of all fill.

It is anticipated that footings will be founded 24 inches beneath the finished grade. These footings can be design for a net allowable soil pressure of 3000 pounds per square foot (psf). This pressure can be increased by one-third when considering total design loads, including wind or seismic forces. Estimated total and differential settlement for footings designed for this soil bearing capacity should be less than one inch and three-quarters inch, respectively.

F. Lateral Resistance and Loads

Soil Strength Parameters Used in Design
For the purpose of our evaluation, we have assumed the following strength parameters:

TABLE 2
SOIL STRENGTH PARAMETERS

Condition	Angle of Internal Friction	Cohesion (pounds per square foot)	Wet Unit Weight (pounds per cubic foot)
On-site Materials	32	300	130
Import Fill	32	100	120

Lateral Resistance
Resistance to lateral loads can be obtained from passive earth pressures and soil friction. For design, we recommend the use of a coefficient of friction of 0.42 with a passive pressure of 400 pounds per cubic foot (equivalent fluid pressure).

Lateral Loads
The on-site soils are not considered suitable for use a retaining wall backfill. All backfill materials should be the requirements of Table 1, "Import Fill Requirements". Accordingly for

level backfill using select granular materials, the recommended active pressure can be taken as 40 pounds per cubic foot (equivalent fluid pressure). For restrained retaining walls, the design at-rest pressure can be taken as 60 pounds per cubic foot (equivalent fluid pressure).

Retaining Wall Drainage

Subsurface drainage of any retaining structures is required to prevent the build-up of hydrostatic pressures behind the retaining wall. Drainage structures should at a minimum consist of perforated 4-inch in diameter drain pipe within drain rock enveloped by drainage fabric. The drain pipe should outlet to proper drainage devices. Actual drainage design should also incorporated project water proofing requirements. The design of the system should be performed by the Project Civil Engineer. Moreover, the retaining wall should be designed either with a drainage swale or other mechanism to divert water away from the top of the wall. Water should never be allowed to pond adjacent to any retaining wall.

G. Exterior Concrete Flatwork

Exterior concrete flatwork (i.e. walkways, stoops and patios) should be supported on properly prepared compacted select materials as described in previous portions of this report.

In preparation for slab or flatwork construction, the Earthwork Contractor shall ensure that soils have been prepared as recommended and that field density tests have been performed to document that the relative compaction of the slab subgrade is at least 90 percent relative compacted, based on the maximum dry density determined by ASTM D1557. Preparation of the native soils shall be documented prior to placement of select fill, aggregate base or structural components.

All dedicated exterior flatwork should conform to standards provided by the governing agency including section composition, supporting material thicknesses and any requirements for reinforcing steel.

Private exterior flatwork, such as walkways, should consist of 4 inches of Portland Cement Concrete underlain by at least 6 inches of compacted (95 percent relative compaction) aggregate base material and should consist of Portland Cement Concrete with a minimum 28 day compressive strength of 4000 pounds per square inch (psi) with entrained air.

Public exterior flatwork should conform to the requirements of the local jurisdiction.

Concrete mix proportions and construction techniques, including the addition of water and improper curing, can adversely affect the finished quality of the concrete and result in cracking and spalling of the slabs. We recommend that all placement and curing be performed in accordance with procedures outlined by the American Concrete Institute and Portland Cement Association. Special considerations should be given to concrete placed and cured during hot or cold weather conditions. Proper control joints and reinforcing mesh should be provided to minimize any damage resulting from shrinkage.

Due to the potential for seasonal surface water and lateral vapor migration to occur, associated with seasonal moisture change and differences between the building interior and exterior ambient conditions, a vapor inhibitor should be considered if moisture sensitive floor coverings

are proposed. Vapor barriers should be designed in accordance with current American Concrete Institute (ACI) guidelines.

H. Corrosion

Corrosive tests performed on the on-site soils indicate that the material is considered severely corrosive to buried metal conduit. Appropriately, protection of buried metal conduit, per manufacturer's guidelines, is recommended. The soils are not considered detrimental to normally formulated concrete.

I. Pavement Sections

Flexible pavement sections (driveway) can be supported on properly prepared subgrade. Based on an R-Value of 30 and minimum requirements of local agencies, the recommend pavement sections are presented in the following tables:

RECOMMENDED ASPHALT CONCRETE PAVEMENT SECTIONS		
Pavement Designation	**Asphalt Concrete (inches)**	**Aggregate Base (inches)**
Access Roads	4	6
Parking Area	4	6

RECOMMENDED PORTLAND CEMENT CONCRETE PAVEMENT SECTIONS		
Pavement Designation	**Concrete (inches)**	**Aggregate Base (inches)**
Dumpster Approaches	6	6

The Earthwork Contractor shall ensure that field density tests have been performed to document the relative compaction of at least the upper 6 inches of select fill. Preparation of the native soils shall be documented prior to placement of select fill or aggregate base.

Because of the close proximity of the slab subgrade elevation to groundwater elevations, a slab drainage system should be incorporated into the overall building subsurface drainage design. This design will be performed by your Civil Engineer.

J. Additional Geotechnical Engineering Services

This report is geotechnical in nature and not intended to identify other site constraints such as environmental hazards, wetlands determinations and/or the potential presence of buried utilities. We can assist in evaluating these considerations should further information be requested. Moreover, this office should be retained to provide grading observation and testing as well as associated special inspection during all phases of construction.

All plans and specifications for projects should be reviewed for conformance with this geotechnical report and approved by the Geotechnical Engineer prior to submission to the building department for review.

The recommendations presented in this report are based on the assumption that sufficient field inspection and construction review will be provided during all phases of construction. A pre-job conference should be scheduled to include, but not be limited to, the Owner, Architect, Civil

Engineer, General Contractor, Earthwork and Materials Sub-Contractors, Building Official and Geotechnical Engineer. The recommendations presented in this report should be reviewed by all parties to discuss applicable specifications and testing requirements. At this time, any applicable material quality and mix design reports should be submitted for approval by the Geotechnical Engineer.

Pezonella Associates, Inc. has prepared this report based on certain assumptions concerning subsurface conditions at the Property. Pezonella Associates, Inc. should also provide on-site observations and testing during site preparations and grading, excavation, fill placement, foundation installation and paving. These observations will allow us to document that the soil conditions are as anticipated, and that the Contractor's work is in conformance with the intent of our recommendations and the approved plans and specifications. Our conclusions and recommendations may be invalidated, partially or in whole, by changes outside our control and by subsequent acts occurring on the site after field reconnaissance. This report may be subject to review and revision at any time. Opinions about the condition of the Property do not constitute a warranty of any kind.

PEZONELLA ASSOCIATES, INC.
520 Edison Way
Reno, NV 89502

VII DISTRIBUTION

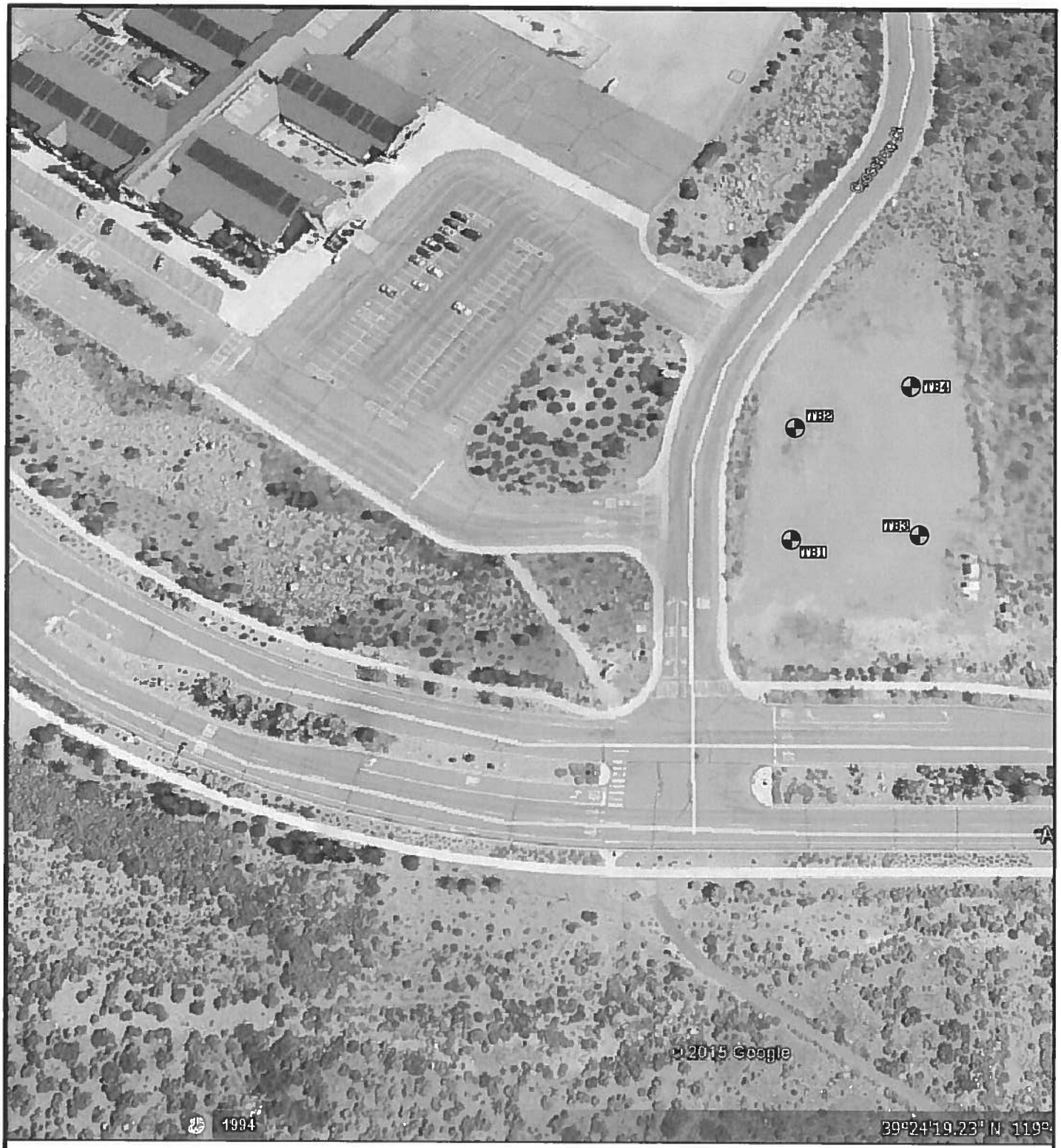
Two wet stamped copies and one electronic copy to Addressee:

Mr. Matthew Rasmussen
Tectonics Design Group
10451 Double R Blvd
Reno, Nevada 89521
matt@tdg-inc.com

LIST OF ILLUSTRATIONS

Remarks: 1"= ~1,400'
Site Plan provided by Google Earth

Job No. 6098.14-A	SITE PLAN	Date: 12-17-15
Pezonella Associates, Inc Consulting Engineers 520 Edison Way Reno, Nevada 89502 PHONE (775) 856-5666 FAX (775) 856-5042	CROSSBOW COURT NEIGHBORHOOD COMMERCIAL APN 152-921-01 & 152-921-02 RENO, NEVADA	Plate No. 1



Remarks: 1"= ~110'
Exploration Plan provided by Google Earth

N

= Test Boring Location (Approximate Location)

Job No. 6098.14-A	EXPLORATION PLAN	Date: 12-17-15
Pezonella Associates, Inc Consulting Engineers 520 Edison Way Reno, Nevada 89502 PHONE (775) 856-5566 FAX (775) 856-5042	CROSSBOW COURT NEIGHBORHOOD COMMERCIAL APN 152-921-01 & 152-921-02 RENO, NEVADA	Plate No. 2

LOG OF BORING 1

Equipment CME 55 Hollow-Stem Auger

Elevation 5210 Date 11-24-15

Laboratory Tests and (Other Information)	Driving Resistance Blows/Ft.	Moisture Content (%)	Dry Density (pcf)	Depth (ft) Sample
● = Oversized Sampler * Particle Size Distribution Report with Atterberg Limits (See Plate 8)				
●	32/12"			*
●	87/12"			5
				10
				15
				20
				25

GRAY SILTY SAND (SM) WITH GRAVEL

BROWN SILTY SAND (SM) WITH FEW GRAVELS FILL

BROWN SILTY SAND (SM) WITH FEW GRAVELS
med dense, moist

BROWN SILTY SAND (SM) WITH FEW GRAVELS
dense, moist

Total Depth= 5.5 feet

No Free Water Encountered

Job No. 6098.14-A	BORING LOG	Date: 12-17-15
Pezonella Associates, Inc Consulting Engineers 520 Edison Way Reno, Nevada 89502 PHONE (775) 856-5566 FAX (775) 856-6042	CROSSBOW COURT NEIGHBORHOOD COMMERCIAL APN 152-921-01 & 152-921-02 RENO, NEVADA	Plate No. 3

LOG OF BORING 2

Equipment CME 55 Hollow-Stem Auger And Solid-Flight Auger

Elevation 5210 Date 11-24-15

Laboratory Tests and (Other Information)	Driving Resistance Blows/Ft.	Moisture Content (%)	Dry Density (pcf)	Depth (ft) Sample	
	20/0"				GRAY SILTY SAND (SM) WITH GRAVEL
					BROWN SILTY SAND (SM) WITH GRAVEL — FILL
					Sampler Refusal, Bouncing Switched to Solid-Flight Augers at 2 feet
	55/9"			5	BROWN SILTY SAND (SM) WITH GRAVEL very dense, moist
				10	
				15	
				20	
				25	

Total Depth= 5 feet

No Free Water Encountered

Job No. 6098.14-A	BORING LOG	Date: 12-17-15
Pezonella Associates, Inc Consulting Engineers 520 Edison Way Reno, Nevada 89502 PHONE (775) 856-5566 FAX (775) 856-5042	CROSSBOW COURT NEIGHBORHOOD COMMERCIAL APN 152-921-01 & 152-921-02 RENO, NEVADA	Plate No. 4

LOG OF BORING 3

Equipment CME 55 Hollow-Stem Auger And Solid-Flight Auger

Elevation 5209 Date 11-24-15

Laboratory Tests and (Other Information)	Driving Resistance Blows/Ft.	Moisture Content (%)	Dry Density (pcf)	Depth (ft) Sample
● = Oversized Sampler * Particle Size Distribution Report with Atterberg Limits (See Plate 9) Corrosion Test Results (See Plate 11)	● 50/5" ● 60/4" ● 60/6" ● 20/0"			* 5 10 15 20 25

GRAY SILTY SAND (SM) WITH GRAVEL — FILL

BROWN SILTY SAND (SM) WITH GRAVEL
very dense, moist

BROWN SILTY SAND (SM) WITH GRAVEL
very dense, moist
Switched to Solid-Flight Augers at 4.5 feet

BROWN SILTY SAND (SM) WITH GRAVEL
very dense, moist

BROWN SILTY SAND (SM) WITH GRAVEL
Sampler Refusal, Bouncing

Total Depth= 13.5 feet

No Free Water Encountered

Job No. 6098.14-A	BORING LOG	Date: 12-17-15
Pezonella Associates, Inc Consulting Engineers 520 Edison Way Reno, Nevada 89502 PHONE (775) 856-5566 FAX (775) 856-6042	CROSSBOW COURT NEIGHBORHOOD COMMERCIAL APN 152-921-01 & 152-921-02 RENO, NEVADA	Plate No. 5

LOG OF BORING 4

Equipment CME 55 Solid-Flight Auger

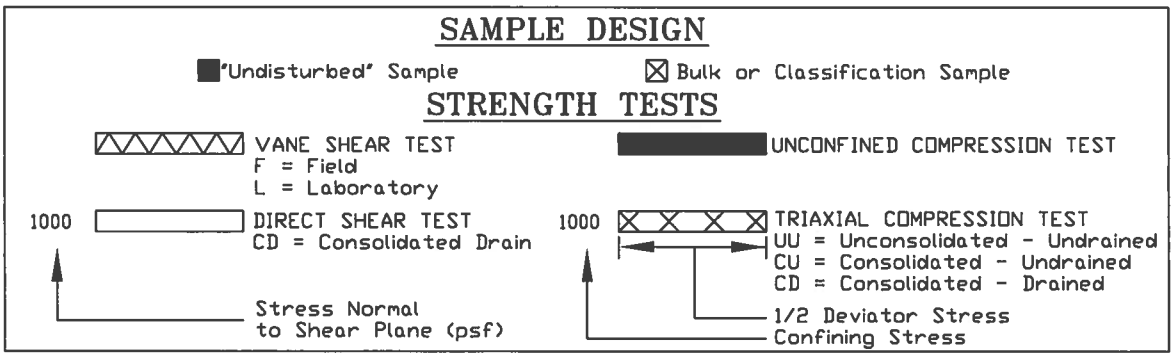
Elevation 5209 Date 11-24-15

Laboratory Tests and (Other Information)	Driving Resistance Blows/Ft.	Moisture Content (%)	Dry Density (pcf)	Depth (ft) Sample	
					GRAY SILTY SAND (SM) WITH GRAVEL
					BROWN SILTY SAND (SM) WITH GRAVEL — FILL
	20/3"			5	BROWN SILTY SAND (SM) WITH GRAVEL very dense, moist
	36/12"			10	BROWN SILTY SAND (SM) WITH GRAVEL dense, moist
	55/11"			15	BROWN SILTY SAND (SM) WITH GRAVEL very dense, moist
				20	Total Depth= 15 feet No Free Water Encountered
				25	

Job No. 6098.14-A	BORING LOG	Date: 12-17-15
Pezonella Associates, Inc Consulting Engineers 520 Edison Way Reno, Nevada 89502 PHONE (775) 856-5566 FAX (775) 856-6042	CROSSBOW COURT NEIGHBORHOOD COMMERCIAL APN 152-921-01 & 152-921-02 RENO, NEVADA	Plate No. 6

MAJOR DIVISIONS				TYPICAL NAMES
COARSE GRAINED SOILS (MORE THAN HALF IS LARGER THAN #200 SIEVE)	GRAVELS (MORE THAN HALF COURSE FRACTION IS LARGER THAN No. 4 SIEVE SIZE)	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES
			GP	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES
		GRAVELS WITH OVER 12% FINES	GM	SILTY GRAVELS, POORLY GRADED GRAVEL-SAND SILT MIXTURES
			GC	CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND-CLAY MIXTURES
	SANDS (MORE THAN HALF COURSE FRACTION IS SMALLER THAN No. 4 SIEVE SIZE)	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS
			SP	POORLY GRADED SANDS, GRAVELLY SANDS
		SANDS WITH OVER 12% FINES	SM	SILTY SANDS, POORLY GRADED SAND-SILT MIXTURES
			SC	CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES
FINE GRAINED SOILS (MORE THAN HALF IS SMALLER THAN #200 SIEVE)	SILTS AND CLAY (LIQUID LIMIT LESS THAN 50)		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS SILTY CLAYS, LEAN CLAYS
			OL	INORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS (LIQUID LIMIT GREATER THAN 50)		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS

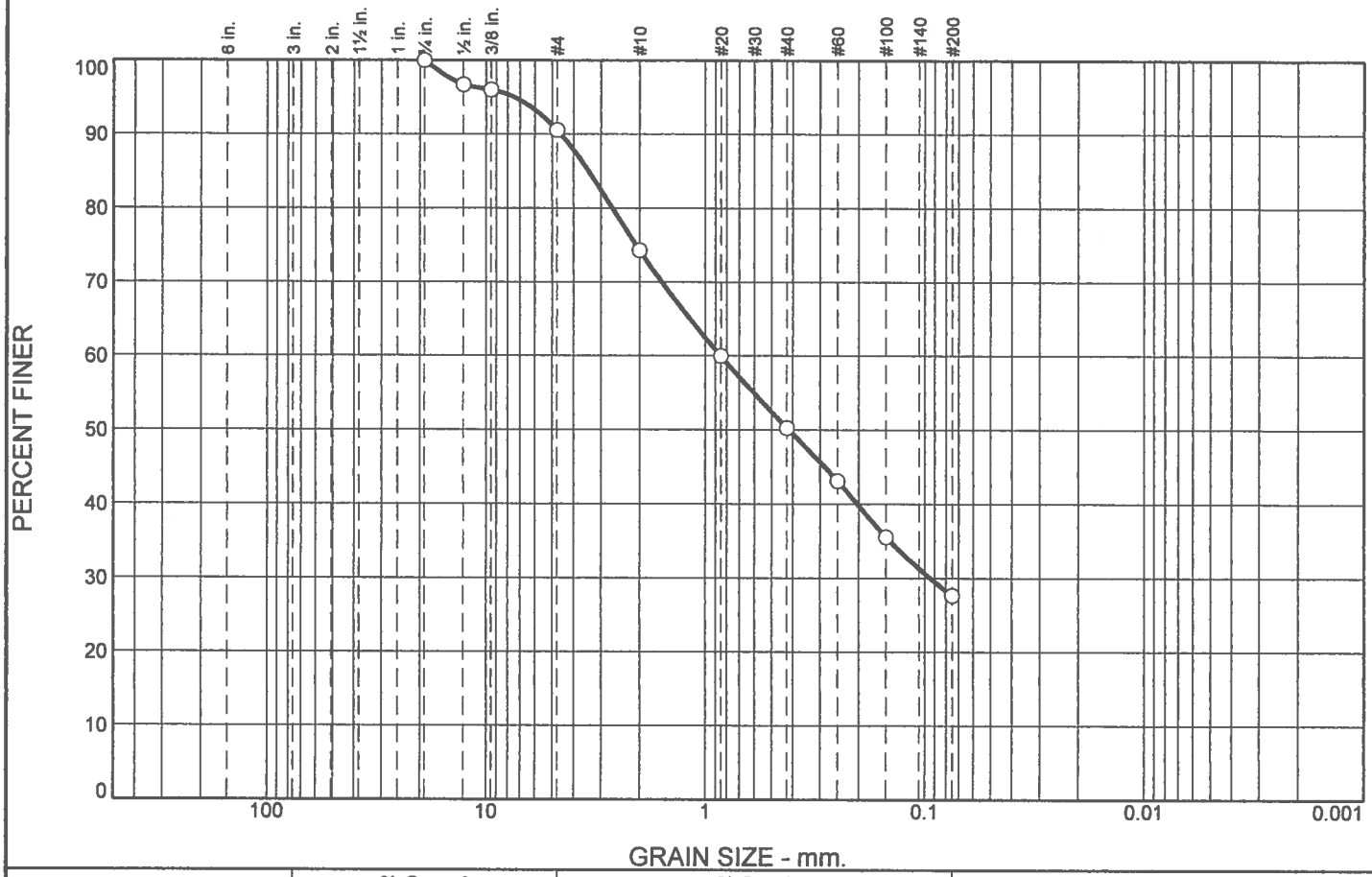
UNIFIED SOIL CLASSIFICATION SYSTEM



KEY TO TEST DATA

Job No. 6098.14-A	SOIL CLASSIFICATION CHART	Date: 12-17-15
Pezonella Associates, Inc Consulting Engineers 520 Edison Way Reno, Nevada 89502 PHONE (775) 856-5566 FAX (775) 856-6042	CROSSBOW COURT NEIGHBORHOOD COMMERCIAL APN 152-921-01 & 152-921-02 RENO, NEVADA	Plate No. 7

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	9.5	16.2	24.0	22.7	27.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75"	100.0		
.5"	96.7		
.375"	96.0		
#4	90.5		
#10	74.3		
#20	60.0		
#40	50.3		
#60	43.1		
#100	35.6		
#200	27.6		

* (no specification provided)

Soil Description

Brown Silty Sand (SM) with Few Gravels

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 4.5741 D_{85}= 3.4177 D_{60}= 0.8497
D_{50}= 0.4164 D_{30}= 0.0942 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

Source of Sample: Boring 1 **Depth:** 1.0-4.0'
Sample Number: 15-377

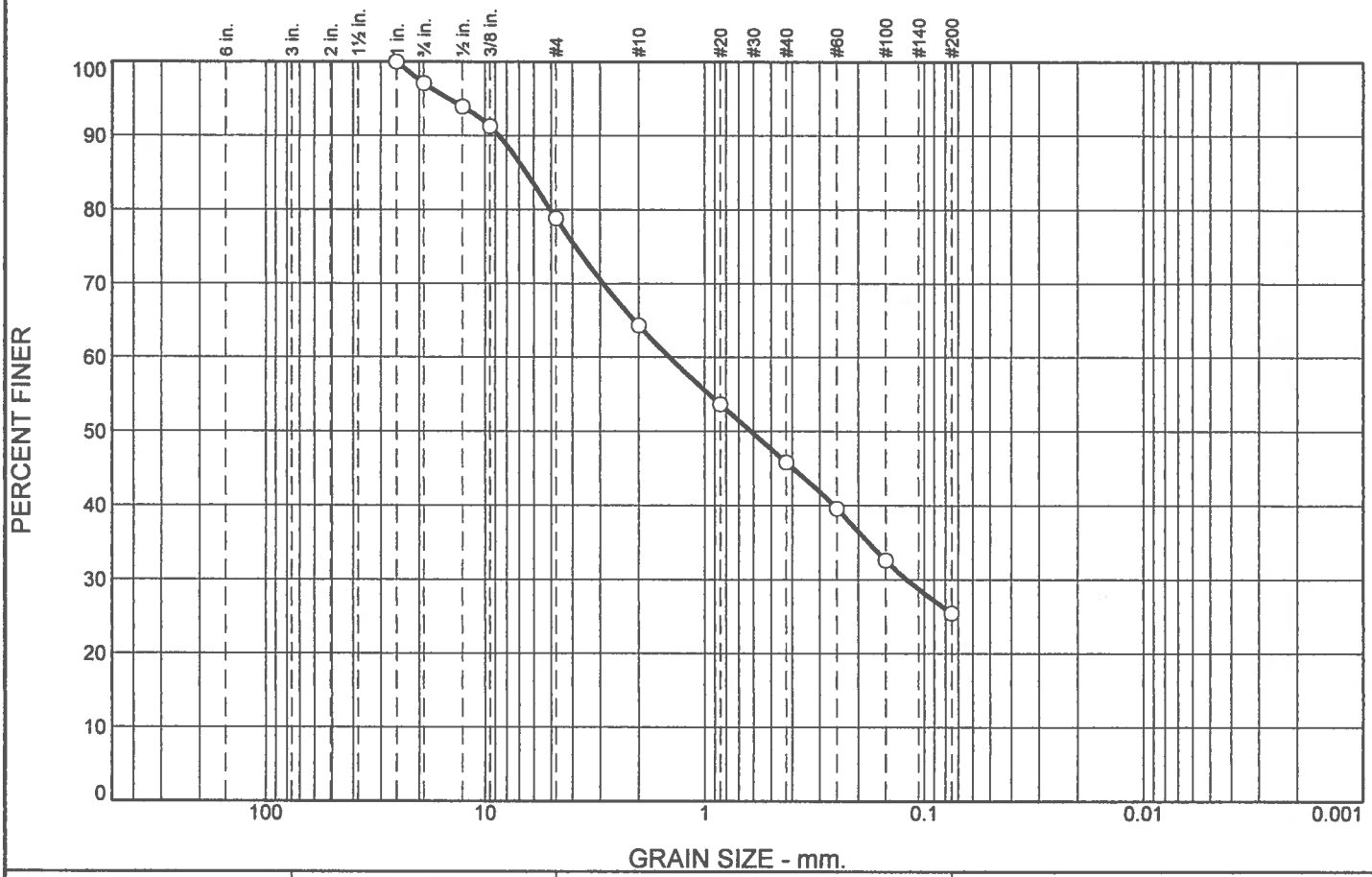
Date: 12-17-15

PEZONELLA ASSOCIATES, INC.
Reno, Nevada

Client:
Project: Crossbow Court Neighborhood Commercial

Project No: 6098.14A **Figure** 8

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	2.9	18.3	14.5	18.5	20.3	25.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
.75"	97.1		
.50"	93.9		
.375"	91.3		
#4	78.8		
#10	64.3		
#20	53.7		
#40	45.8		
#60	39.6		
#100	32.6		
#200	25.5		

* (no specification provided)

Soil Description

Brown Silty Sand (SM) with Gravel

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 8.6609 D_{85}= 6.4846 D_{60}= 1.4430
D_{50}= 0.6160 D_{30}= 0.1200 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

Corrosion Test report can be found on Plate 11

Source of Sample: Boring 3 **Depth:** 1.5-3.5'
Sample Number: 15-378

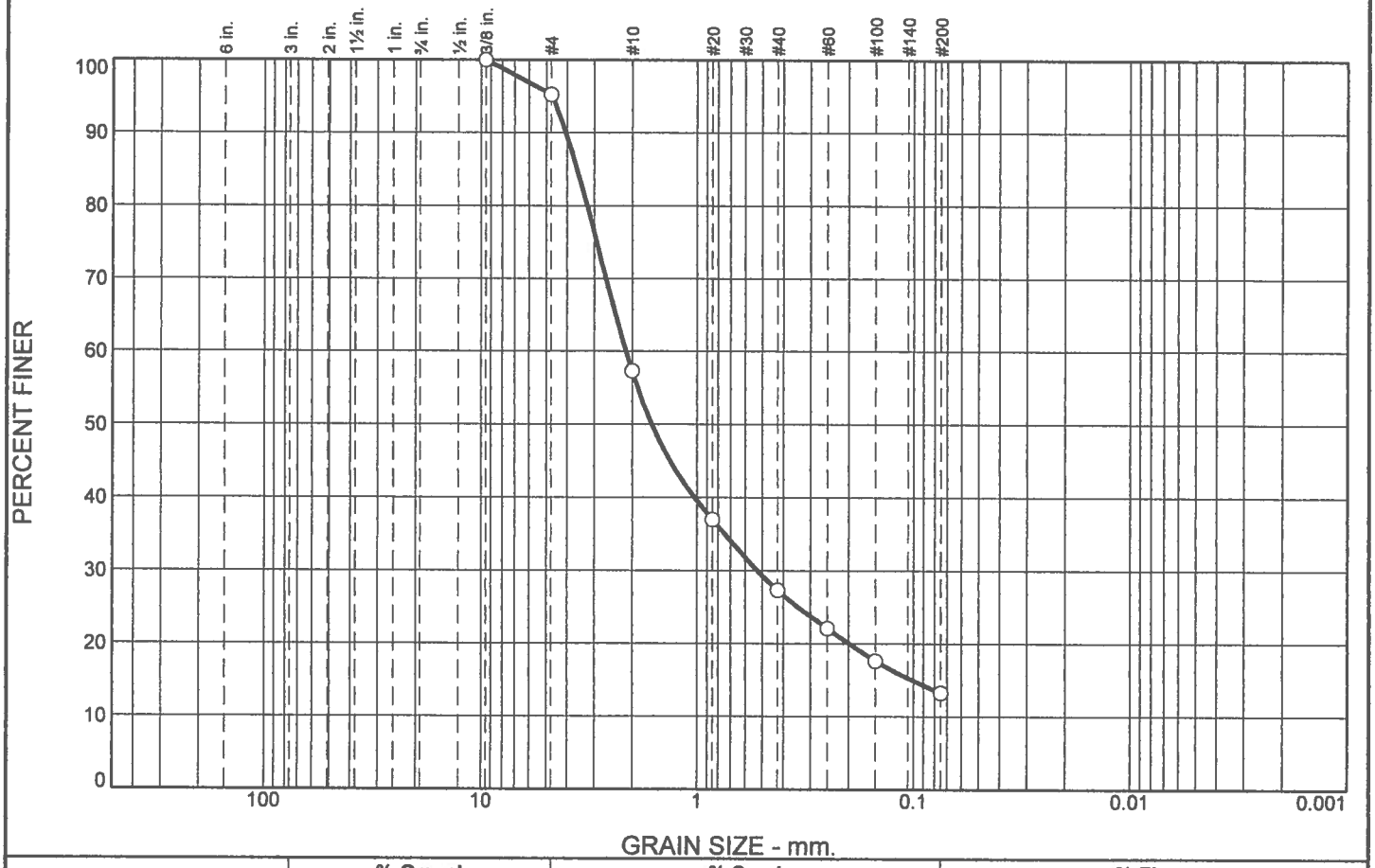
Date: 12-17-15

PEZONELLA ASSOCIATES, INC.
Reno, Nevada

Client:
Project: Crossbow Court Neighborhood Commercial

Project No: 6098.14A **Figure** 9

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	4.7	38.0	30.0	14.0	13.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.375"	100.0		
#4	95.3		
#10	57.3		
#20	37.0		
#40	27.3		
#60	22.1		
#100	17.6		
#200	13.3		

* (no specification provided)

Soil Description

Gray Silty Sand (SM)

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 4.0530 D_{85}= 3.5966 D_{60}= 2.1313
D_{50}= 1.6170 D_{30}= 0.5272 D_{15}= 0.1015
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO= A-1-b

Remarks

Source of Sample: Stockpiled Material
Sample Number: 15-379

Date: 12-17-15

PEZONELLA ASSOCIATES, INC.
Reno, Nevada

Client:
Project: Crossbow Court Neighborhood Commercial

Project No: 6098.14A **Figure** 10

Nevada Analytical Services

855 Mill Street, Suite 2B, Reno, NV 89502 | Phone: 775.284.3970 | Fax: 866.755.7619
NV Laboratory ID: NV00923 | EPA Laboratory ID: NV00923

Contact:	Dean Stanphill	**Laboratory Report Identification:**	**1115038**
Company/Client:	Pezonella Associates, Inc.		
Address:	520 Edison Way	**Submission Date:**	11/25/2015
City:	Reno	**Sampling Site:**	Crossbow Court
State:	NV	**Project:**	6098.14A
Zip:	89502	**Reference Number:**	N/A
Phone:	(775) 856-5566	**PO Number:**	1682
Fax:	(775) 856-6042	**Sampled By:**	Client

Client Identification: Bulk 15-378 Boring 3, 1.5-3.5' **Sampling Date:** 11/24/2015
Laboratory Sample Control Number: 1115038-1 **Matrix:** Solid

Analyses	Description	Result	Reporting Limit	Units	Method	Date Analyzed	DF	DL
Sulfate		ND	10	mg/Kg	EPA 300.0	12/10/2015	100	0.1

Analyses	Description	Result	Reporting Limit	Units	Method	Date Analyzed	DF	DL
Conductivity	1:10 Extraction	440	N/A	µmhos/cm	SM 2510 B	12/10/2015		none

Analyses	Description	Result	Reporting Limit	Units	Method	Date Analyzed	DF	DL
pH	pH at 1:10 Extraction	5.31		S.I.U.	SM 4500-H+ B	12/10/2015		N/A

Remarks: None

12/10/2015

Michael R. Genova, Technical Director **Date**

References:

mg/L: Milligrams/Liter (ppm)
mg/kg: Milligrams/Kilogram (ppm)
ppm: Parts per million
* Analyzed by Contract Laboratory

ND: Not Detected at RL
RL: Reporting Limit (calculation, RL = DF * DL)
DF: Dilution Factor
DL: Detection Limit

UL: Under Laboratory Established Limits
OL: Over Laboratory Established Limits

Reported analytical results relate only to the Item(s) tested or to the sample(s) as received by the laboratory.

Laboratory Report Identification: 1115038

Job No. 6098.14-A	CORROSION REPORT	Date: 12-17-15
Pezonella Associates, Inc Consulting Engineers 520 Edison Way Reno, Nevada 89502 PHONE (775) 856-5566 FAX (775) 856-6042	CROSSBOW COURT NEIGHBORHOOD COMMERCIAL APN 152-921-01 & 152-921-02 RENO, NEVADA	Plate No. 11

SOLAEGUI
ENGINEERS

March 19, 2020

Chris Bronczyk
Washoe County Community Development
P.O. Box 11130
Reno, Nevada 89520

Re: Connect Community Center Parking Review Letter

Dear Chris:

This letter contains the findings of our parking review of the proposed community center located on the northeast quadrant of the Arrowcreek Parkway / Crossbow Court intersection in Washoe County Nevada. The developer plans to construct a 15,300 square feet community center. The site plan and floor plan are attached. It contains 48 on-site parking spaces.

Parking calculations are based on Washoe County Parking Code. The land uses is community center. Table 1 shows the calculated parking demand based on county code. We do not know the number of employees at this time so the calculation is based on the building size only.

TABLE 1
EXISTING PARKING DEMAND BASED ON COUNTY CODE

LAND USE	SIZE	RATE	PARKING DEMAND
Community Center	15,300 Square Feet	5 spaces per 1,000 SF plus 1 per employee	77

As indicated in Table 1, the parking demand is 77 spaces. This is 29 spaces more than the number of parking spaces shown on the site plan.

Table 2 shows the modified calculated parking demand based on rates taken from the Fifth Edition of ITE Parking Generation. The use is categorized as Recreational Community Center ITE land use #495. The ITE calculation sheet is attached.

TABLE 2
MODIFIED PARKING DEMAND BASED ON ITE

LAND USE	SIZE	RATE	PARKING DEMAND
Community Center	15,500	2.07 Spaces Per 1000 Square Feet	32

Solaegui Engineers Ltd. • 715 H Street • Sparks, Nevada 89431 • 775/358-1004 • FAX 775/358-1098
Civil & Traffic Engineers
e-mail: psolaegui@aol.com

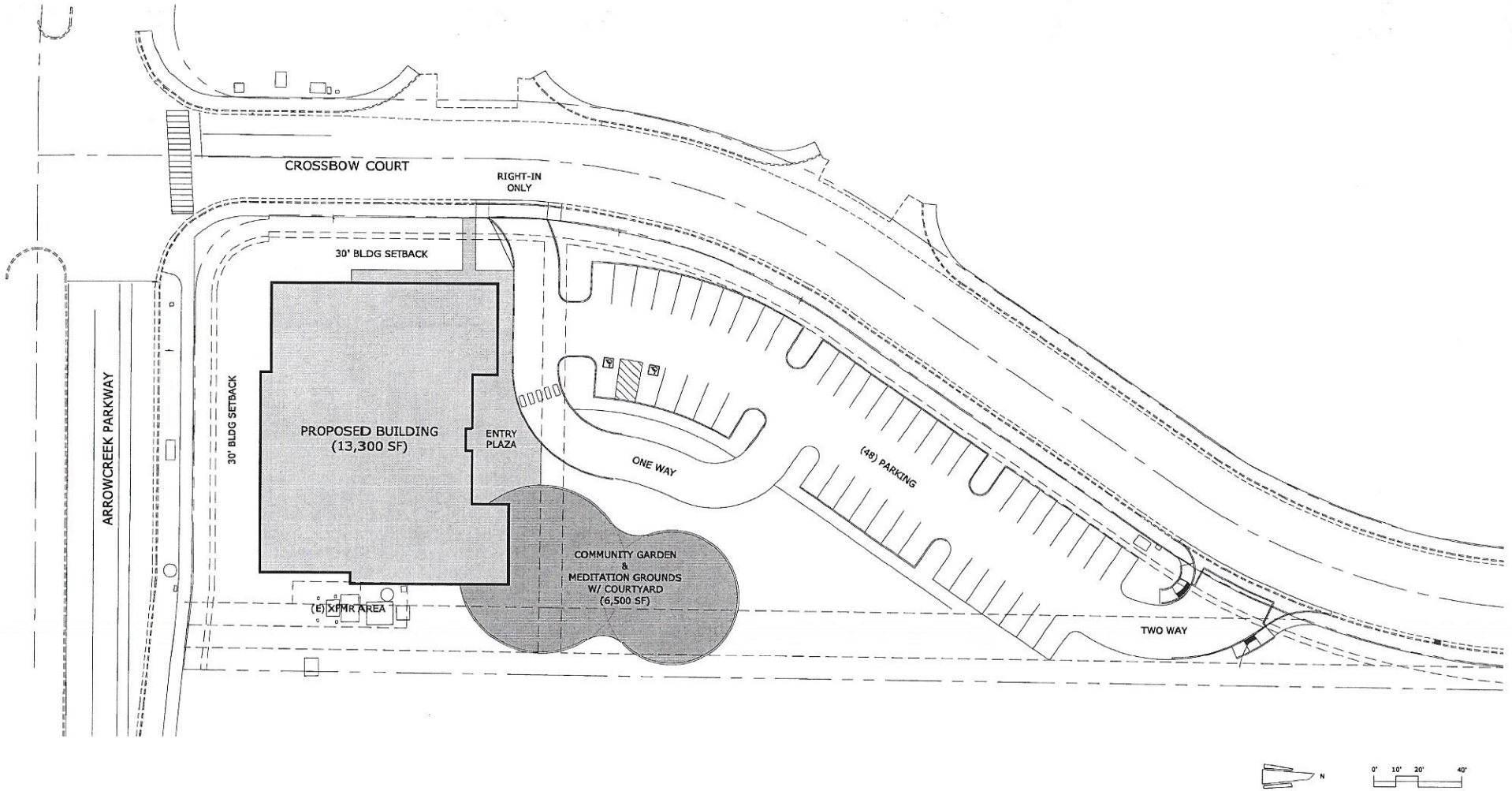
As indicated in Table 2, the total modified parking demand based on ITE rates is 32 spaces. This is 16 spaces less than the number of spaces provided on the site. The site plan shows adequate parking based on these modified parking demand calculations.

We trust that this information will be sufficient for your requirements. Please contact us if you have questions or comments.

Very truly yours,
SOLAEGUI ENGINEERS, LTD

Paul W. Solaegui

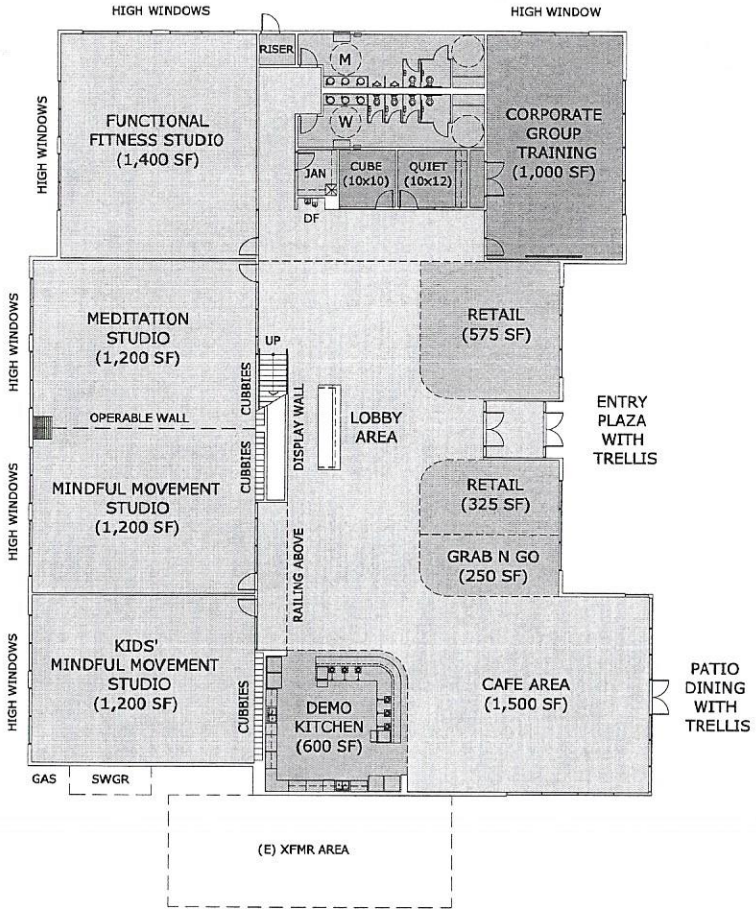
Enclosures
Letters/Connect Parking Letter



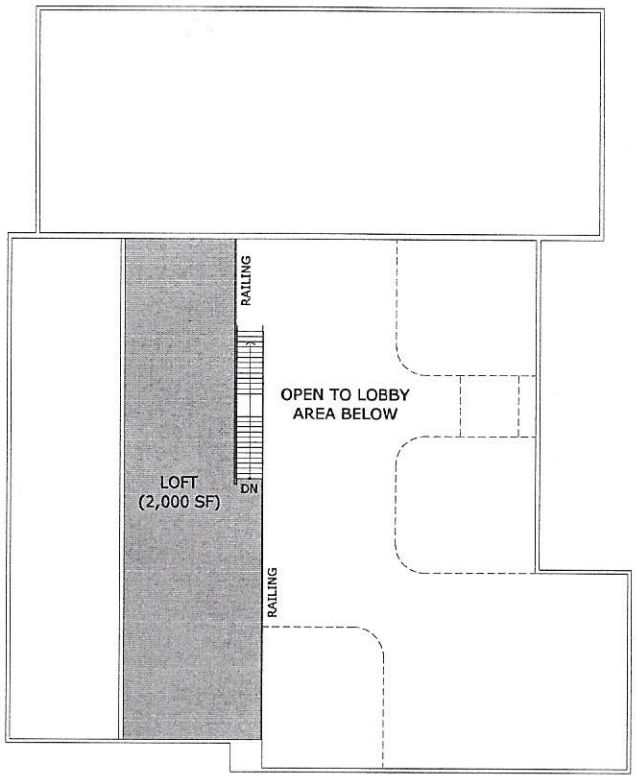
TECTONICS DESIGN GROUP

CONNECT NEIGHBORHOOD CENTER & GARDEN

Conceptual Site Plan | Washoe County | 20002 PR3



GROUND LEVEL
13,300 SF



LOFT LEVEL
2,000 SF

TECTONICS DESIGN GROUP

CONNECT NEIGHBORHOOD CENTER & GARDEN

Conceptual Floor Plan | Washoe County | 20002 PR3

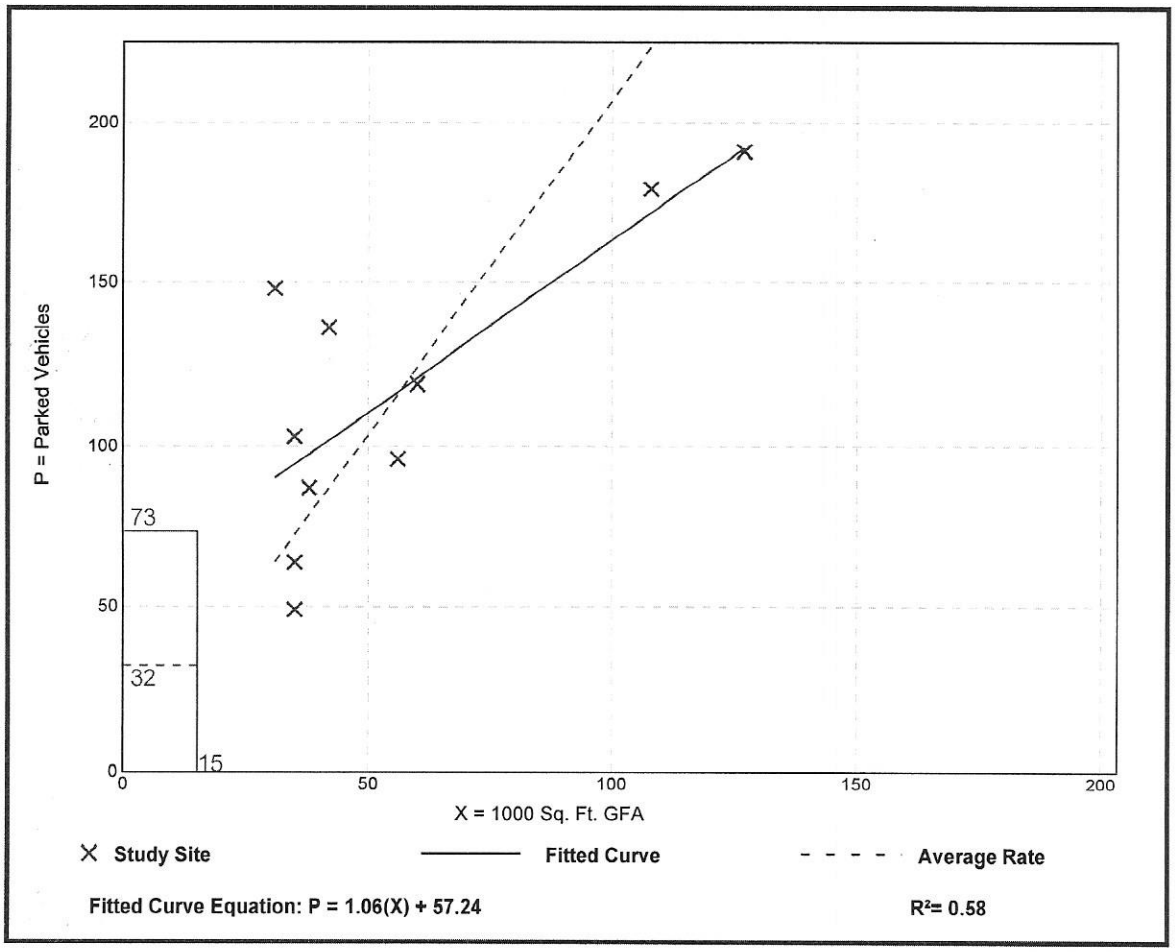
Recreational Community Center
(495)

Peak Period Parking Demand vs: **1000 Sq. Ft. GFA**
On a: **Weekday (Monday - Friday)**
Setting/Location: **General Urban/Suburban**
Peak Period of Parking Demand: **9:00 a.m. - 12:00 p.m.; 5:00 - 8:00 p.m.**
Number of Studies: 10
Avg. 1000 Sq. Ft. GFA: 57

Peak Period Parking Demand per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
2.07	1.40 - 4.77	1.69 / 3.78	***	0.88 (43%)

Data Plot and Equation



Parking Generation Manual, 5th Edition ● Institute of Transportation Engineers

Table 110.410.10.2

OFF-STREET PARKING SPACE REQUIREMENTS (Civic Use Types)
(See Section 110.410.10 for explanation)

Civic Use Types (Section 110.304.20)	Spaces Required		
	Per 1,000 Square Feet Building Space	Per Employee During Peak Employment Shift	Other
Administrative Services	4		
Child Care			
Child Daycare	1 if assembly hall included	1	1 off-street loading space for every 8 students
Family Daycare			1 in addition to any other required spaces
Large-Family Daycare		1	1 off-street loading space for every 8 students
Community Center	5	1	
Convalescent Services		1	.25 per bed
Cultural and Library Services	3	1	
Education			
College/University		1	.5 per student of driving age
Elementary/Secondary		1	.25 per student of driving age
Group Care		1	.25 per bed
Hospital Services		1	.5 per bed
Major Services and Utilities			
Major Public Facilities		As specified by use permit	
Utility Services		As specified by use permit	
Nature Center		As specified by use permit	
Parks and Recreation			
Active Recreation		1	
Passive Recreation		1	
Postal Services	2	1	
Public Parking Services		1	
Religious Assembly			1 per 3 seats or 72 lineal inches of pew space plus 1 per 300 square feet of additional public space
Safety Services		1	

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CONNECT NEIGHBORHOOD CENTER & GARDEN

TRAFFIC STUDY

MARCH 2020

Prepared by:
Solaegui Engineers, Ltd.
715 H Street
Sparks, Nevada 89431
(775) 358-1004

TABLE OF CONTENTS

LIST OF FIGURES

CONNECT NEIGHBORHOOD CENTER & GARDEN

TRAFFIC STUDY

EXECUTIVE SUMMARY

The proposed Connect Neighborhood Center & Garden development will be located in Washoe County, Nevada. The project site is located in the northeast corner of the Arrowcreek Parkway/ Crossbow Court intersection. The project site is currently undeveloped land. The purpose of this study is to address the project's impact upon the adjacent street network. The Arrowcreek Parkway/ Crossbow Court intersection and the existing Hunsburger Elementary School driveways and proposed project driveways on Crossbow Court have been identified for intersection capacity analysis for the existing, existing plus middle school, and existing plus middle school plus project scenarios. The AM peak hours from 7:00 to 8:00, 7:30 to 8:30, and 8:30 to 9:30 and the PM peak hours from 2:00 to 3:00, 3:00 to 4:00, and 4:30 to 5:30 PM were identified for analysis based on the standard AM and PM peak hours of the adjacent streets and the bell times for Hunsburger Elementary School, Sage Ridge School, and the proposed middle school.

The proposed Connect Neighborhood Center & Garden development will consist of the construction of a 12,900 square foot building with outdoor community garden and meditation grounds. Project access will be provided from two proposed driveways on Crossbow Court. The project is anticipated to generate 375 average daily trips with 61 trips occurring during the 7:00 to 8:00 AM and 7:30 to 8:30 AM study hours, 22 trips occurring during the 8:30 to 9:30 AM and 3:00 to 4:00 PM study hours, 12 trips occurring during the 2:00 to 3:00 PM study hour, and 52 trips occurring during the 4:30 to 5:30 PM study hour.

Traffic generated by the proposed Connect Neighborhood Center & Garden development will have some impact on the adjacent street network. The following recommendations are made to mitigate project traffic impacts.

It is recommended that any required signing, striping or traffic control improvements comply with Washoe County requirements.

It is recommended that the north project driveway on Crossbow Court be designed to operate with stop sign control at the driveway approach and include single ingress and egress lanes.

It is recommended that the south project driveway on Crossbow Court be designed to serve ingress-only movements and include a single one-way ingress lane.

It is recommended that project driveways, on-site roadways, and parking lot be designed to conform to Washoe County standards.

It is recommended that adequate on-site signing and striping improvements be installed at the project driveways and internal roadways in order to inform motorists of their intended operation.

It is recommended that the project developers implement a pedestrian circulation plan that clearly shows the walking routes between the proposed Connect Neighborhood Center and Hunsburger Elementary and Sage Ridge schools.

INTRODUCTION

STUDY AREA

The proposed Connect Neighborhood Center & Garden development will be located in Washoe County, Nevada. The project site is located in the northeast corner of the Arrowcreek Parkway/ Crossbow Court intersection. Figure 1 shows the approximate location of the project site. The purpose of this study is to address the project's impact upon the adjacent street network. The Arrowcreek Parkway/Crossbow Court intersection and the existing Hunsburger Elementary School driveways and proposed project driveways on Crossbow Court have been identified for intersection capacity analysis for the existing, existing plus middle school, and existing plus middle school plus project scenarios. The AM peak hours from 7:00 to 8:00, 7:30 to 8:30, and 8:30 to 9:30 and the PM peak hours from 2:00 to 3:00, 3:00 to 4:00, and 4:30 to 5:30 PM were identified for analysis based on the standard AM and PM peak hours of the adjacent streets and the bell times for Hunsburger Elementary School, Sage Ridge School, and the proposed middle school.

EXISTING AND PROPOSED LAND USES

The project site is currently undeveloped land. Adjacent properties generally consist of Hunsburger Elementary School to the west, Sage Ridge School to the north, a middle school that is currently under construction to the east, and single family homes to the south. The proposed Connect Neighborhood Center & Garden development will consist of the construction of a 12,900 square foot building with outdoor community garden and meditation grounds. Project access will be provided from two proposed driveways on Crossbow Court.

EXISTING AND PROPOSED ROADWAYS AND INTERSECTIONS

Arrowcreek Parkway is a four-lane roadway with two through lanes in each direction in the vicinity of the site. The speed limit is posted for 35 miles per hour with a 15 mile per hour school speed limit zone near the intersection with Crossbow Court. Roadway improvements include curb, gutter, sidewalk, and a bike lane on both sides of the street with a wide, raised center median.

Crossbow Court is a two-lane roadway with one through lane in each direction north of Arrowcreek Parkway. The regulatory speed limit is not posted but 15 mile per hour school speed limit zones exist near Hunsburger Elementary School and Sage Ridge School. Roadway improvements generally include curb, gutter, and sidewalk on both sides of the street with a short striped centerline near Arrowcreek Parkway.

The Arrowcreek Parkway/Crossbow Court intersection is an unsignalized three-leg intersection with stop sign control at all approaches. The north approach contains one left turn lane and one right turn lane. The east approach contains two through lanes and one exclusive right turn lane. The west approach contains one exclusive left turn lane and two through lanes. Striped crosswalks exist at the north and west approaches.

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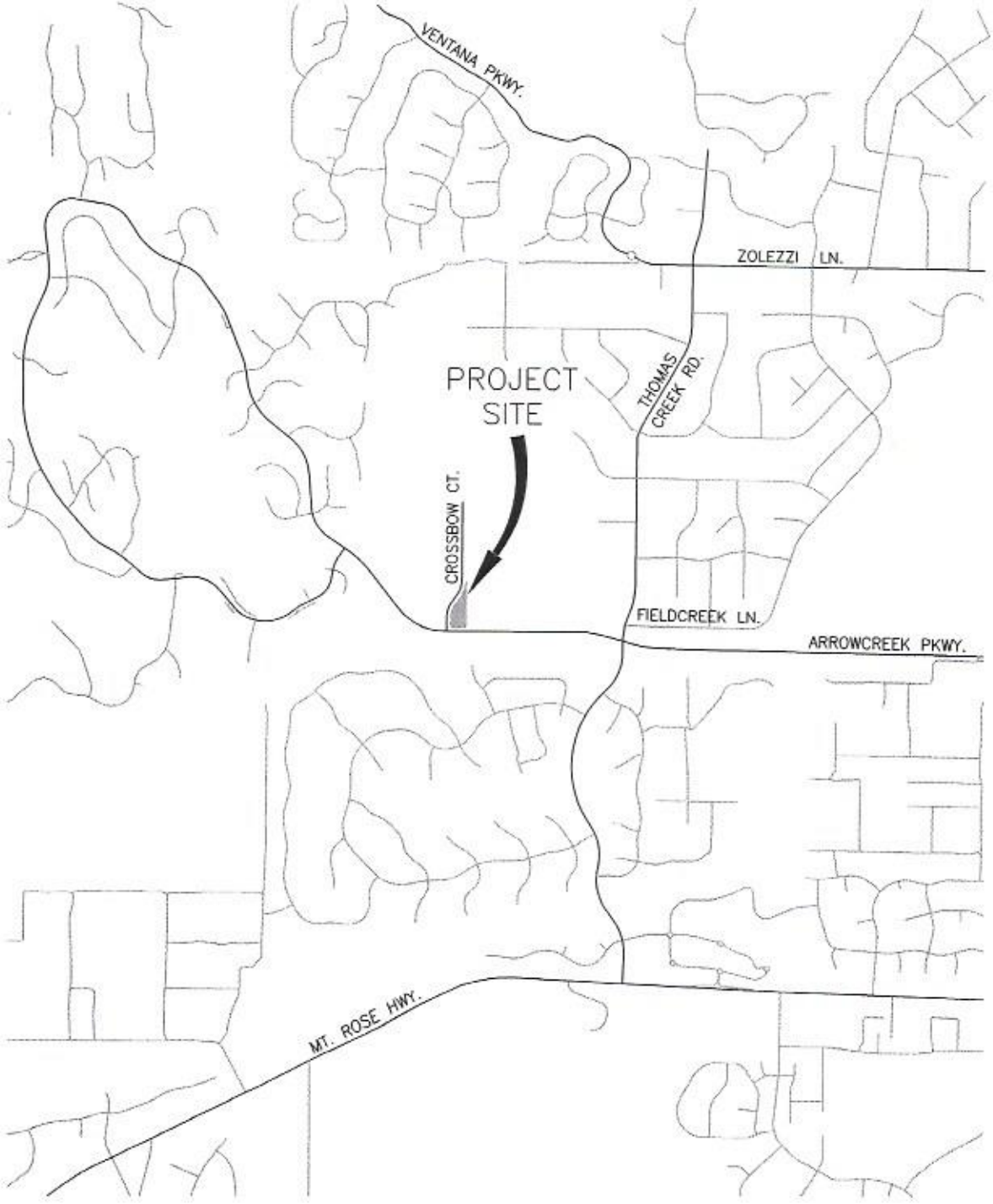
N.T.S.



CONNECT NEIGHBORHOOD CENTER & GARDEN

VICINITY MAP
FIGURE 1

The Crossbow Court/North Hunsburger Elementary School Driveway intersection is an unsignalized three-leg intersection with stop sign control at the west approach. The intersection contains one shared through-right turn lane at the north approach, one shared left turn-through lane at the south approach, and one shared left turn-right turn lane at the west approach. A striped crosswalk exists at the west approach.

The Crossbow Court/South Hunsburger Elementary School Driveway intersection is currently an unsignalized three-leg intersection with stop sign control at the west approach. The intersection contains one shared through-right turn lane at the north approach, one shared left turn-through lane at the south approach, and two striped right turn lanes at the west approach. A striped crosswalk exists at the west approach. With development of the project this intersection will be improved as a four-leg intersection with the addition of the south project driveway at the east approach. The south project driveway will serve ingress-only movements.

The Crossbow Court/North Project Driveway intersection does not currently exist but will be constructed as an unsignalized three-leg intersection with stop sign control at the east approach with development of the project. The intersection is anticipated to contain one shared left turn-through lane at the north approach, one shared through-right turn lane at the south approach, and one shared left turn-right turn lane at the east approach.

TRIP GENERATION

In order to assess the magnitude of traffic impacts of the proposed project on the key intersections, study hours and trip generation rates had to be determined. The AM peak hours from 7:00 to 8:00, 7:30 to 8:30, and 8:30 to 9:30 and the PM peak hours from 2:00 to 3:00, 3:00 to 4:00, and 4:30 to 5:30 PM were identified for analysis based on the standard AM and PM peak hours of the adjacent streets and the bell times for Hunsburger Elementary School, Sage Ridge School, and the proposed middle school.

The 7:00 to 8:00 AM study period is within the standard morning peak hour period and is the morning peak hour for the proposed middle school. The 7:30 to 8:30 AM study period is also within the standard morning peak hour period and is the morning peak hour for Sage Ridge School. The 8:30 to 9:30 AM period is the morning peak hour for Hunsburger Elementary School. The 2:00 to 3:00 PM study period is the afternoon peak hour for the proposed middle school. The 3:00 to 4:00 PM study period is the afternoon peak hour for both Hunsburger Elementary School and Sage Ridge School. The 4:30 to 5:30 PM study period is the standard afternoon peak hour of the adjacent streets.

Trip generation for the project was calculated based on information obtained from the Tenth Edition of *ITE Trip Generation* (2018) for Land Use 495: Recreational Community Center. Trip generation for an average weekday and the standard peak hours were calculated based on the trip generation equations obtained from *ITE Trip Generation*. Trip generation for the 8:30 to 9:30 AM, 2:00 to 3:00 PM, and 3:00 to 4:00 PM study periods were calculated based on hourly percentages of daily traffic for the Recreational Community Center land use. The daily traffic percentages were obtained from *ITE Trip Generation*.

Table 1 shows a summary of the average daily traffic (ADT) volume and AM and PM peak hour volumes generated by the project. The trip generation summary sheets are included in the Appendix.

TABLE 1
TRIP GENERATION

LAND USE	ADT	AM STUDY HOURS						PM STUDY HOURS					
		7:00-8:00		7:30-8:30		8:30-9:30		2:00-3:00		3:00-4:00		4:30-5:30	
		IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
Community Center 12,900 S.F.	375	40	21	40	21	14	8	6	6	10	12	24	28

The project is anticipated to generate 375 average daily trips with 61 trips occurring during the 7:00 to 8:00 AM and 7:30 to 8:30 AM study hours, 22 trips occurring during the 8:30 to 9:30 AM and 3:00 to 4:00 PM study hours, 12 trips occurring during the 2:00 to 3:00 PM study hour, and 52 trips occurring during the 4:30 to 5:30 PM study hour.

TRIP DISTRIBUTION AND ASSIGNMENT

The distribution of the project trips to the key intersections was based on existing peak hour traffic patterns and the locations of attractions and productions in the area. Figure 2 shows the estimated trip distribution for the project trips. The peak hour trips shown in Table 1 were subsequently assigned to the key intersections based on the trip distribution percentages. Figures 3 shows the trip assignment at the key intersections for the AM and PM study hours.

EXISTING AND PROJECTED TRAFFIC VOLUMES

Figure 4 shows the existing traffic volumes at the key intersections during the AM and PM study hours. The existing traffic volumes were obtained from manual counts conducted on a typical school day in March of 2020. Figure 5 shows the existing plus middle school traffic volumes at the key intersections during the AM and PM study periods. The existing plus middle school traffic volumes were obtained by adding trips generated by the proposed middle school to the existing traffic volumes. The trips generated by the middle school for the 7:00 to 8:00 AM, 2:00 to 3:00 PM, and 4:30 to 5:30 PM peak hour periods were obtained from the Arrowcreek Middle School Updated Traffic Study dated March of 2018. The middle school traffic volumes for the 7:30 to 8:30 AM, 8:30 to 9:30 AM, and 3:00 to 4:00 PM study hours were calculated based on hourly percentages of daily traffic for the Middle School land use as obtained from *ITE Trip Generation*. Figure 6 shows the existing plus middle school plus project traffic volumes at the key intersections during the AM and PM study periods. The existing plus middle school plus project traffic volumes were obtained by adding the trip assignment volumes shown on Figure 3 to the existing plus middle school traffic volumes shown on Figure 5.

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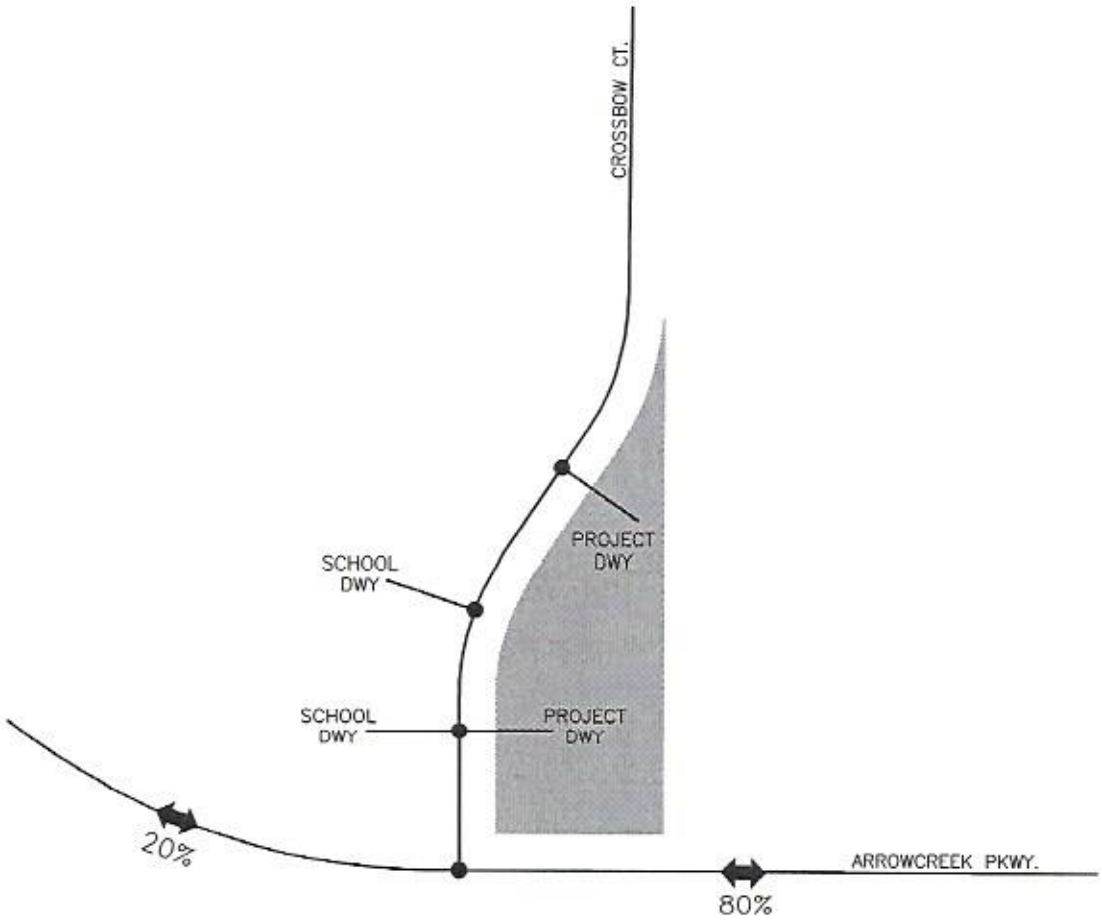
LEGEND

● KEY INTERSECTIONS



CONNECT NEIGHBORHOOD CENTER & GARDEN

TRIP DISTRIBUTION
FIGURE 2

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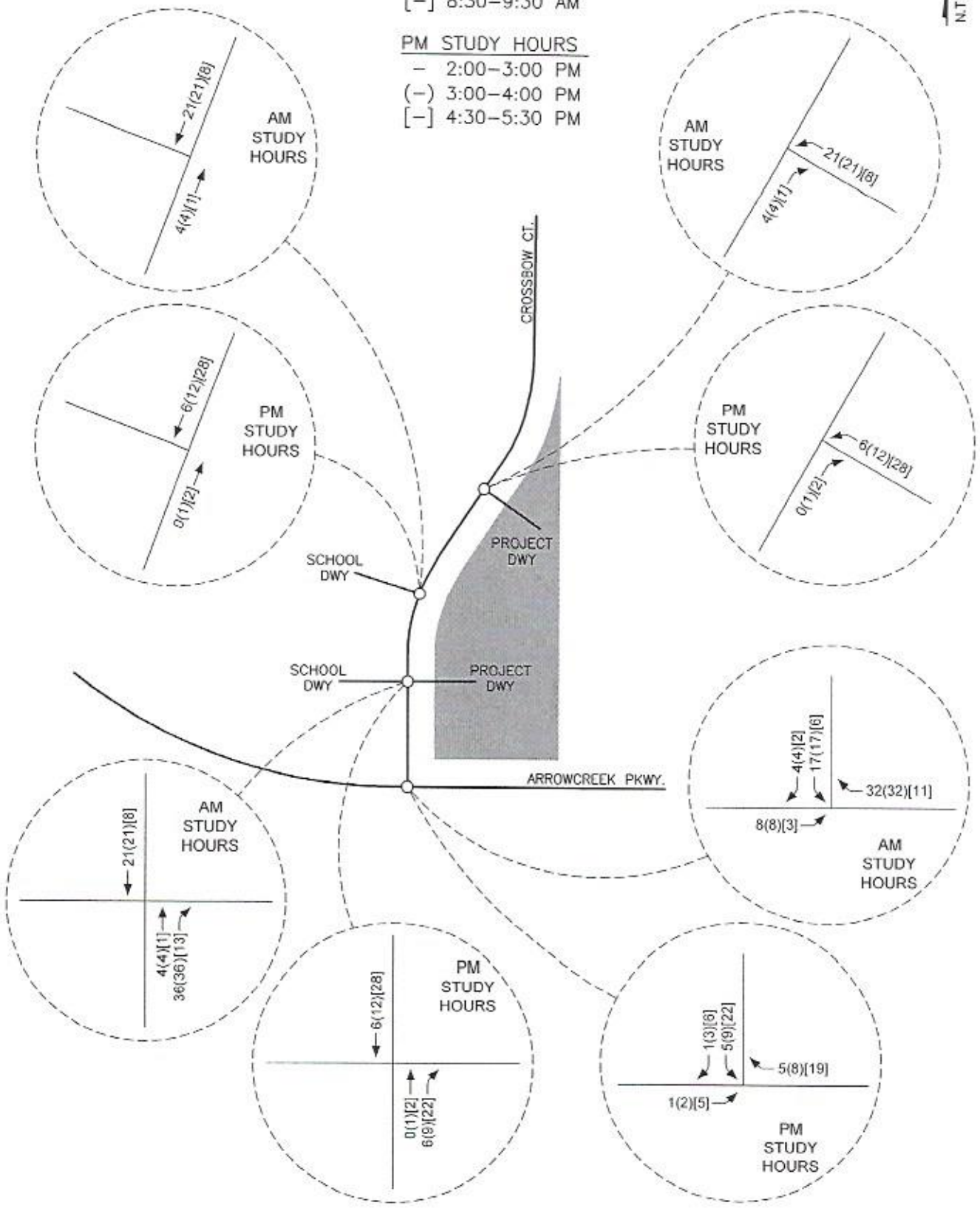
N.T.S.

AM STUDY HOURS
- 7:00–8:00 AM
(–) 7:30–8:30 AM
[–] 8:30–9:30 AM

PM STUDY HOURS
- 2:00–3:00 PM
(–) 3:00–4:00 PM
[–] 4:30–5:30 PM



CONNECT NEIGHBORHOOD CENTER & GARDEN

TRIP ASSIGNMENT
FIGURE 3

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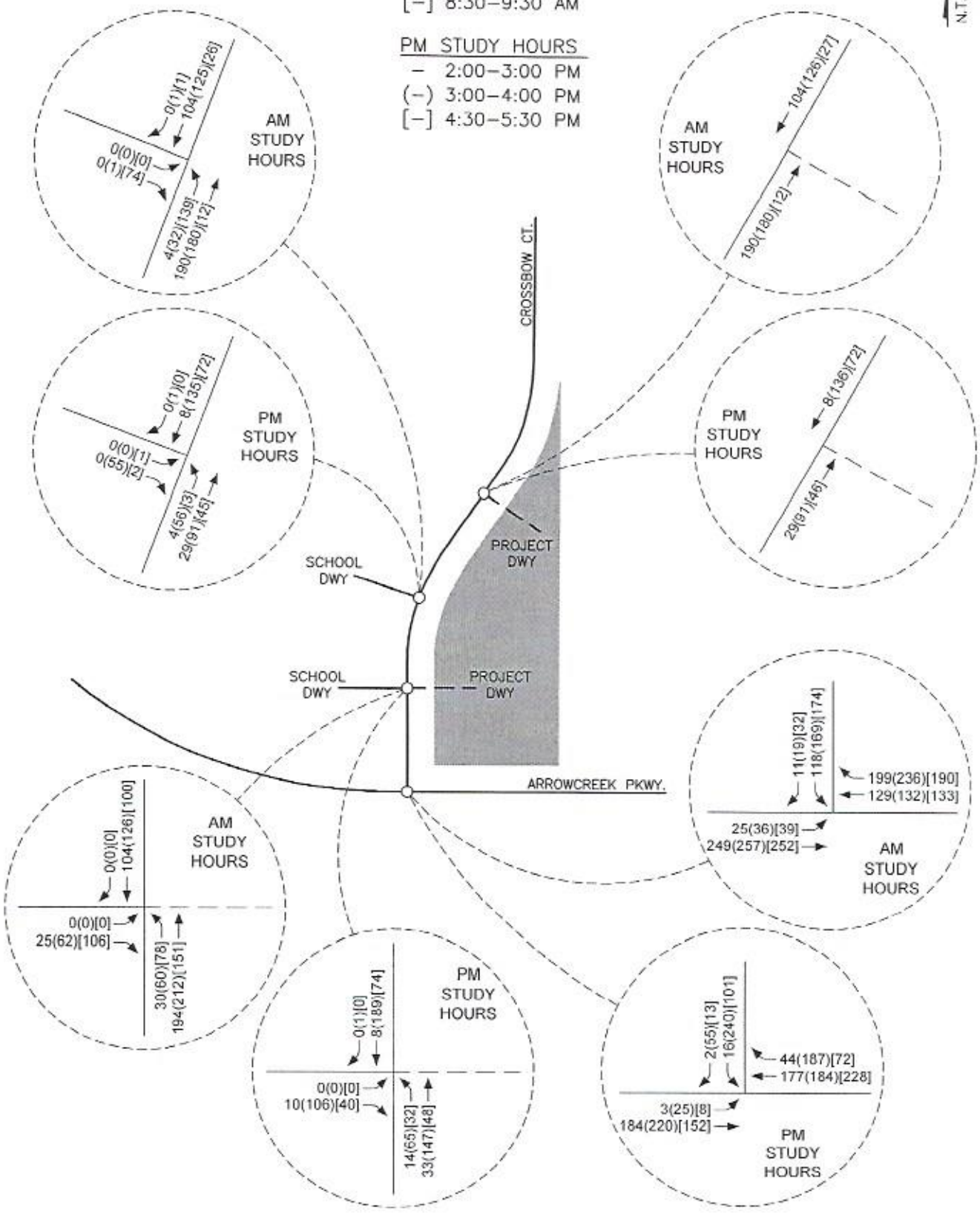
N.T.S.

AM STUDY HOURS
– 7:00–8:00 AM
(–) 7:30–8:30 AM
[–] 8:30–9:30 AM

PM STUDY HOURS
– 2:00–3:00 PM
(–) 3:00–4:00 PM
[–] 4:30–5:30 PM



CONNECT NEIGHBORHOOD CENTER & GARDEN

EXISTING TRAFFIC VOLUMES

FIGURE 4

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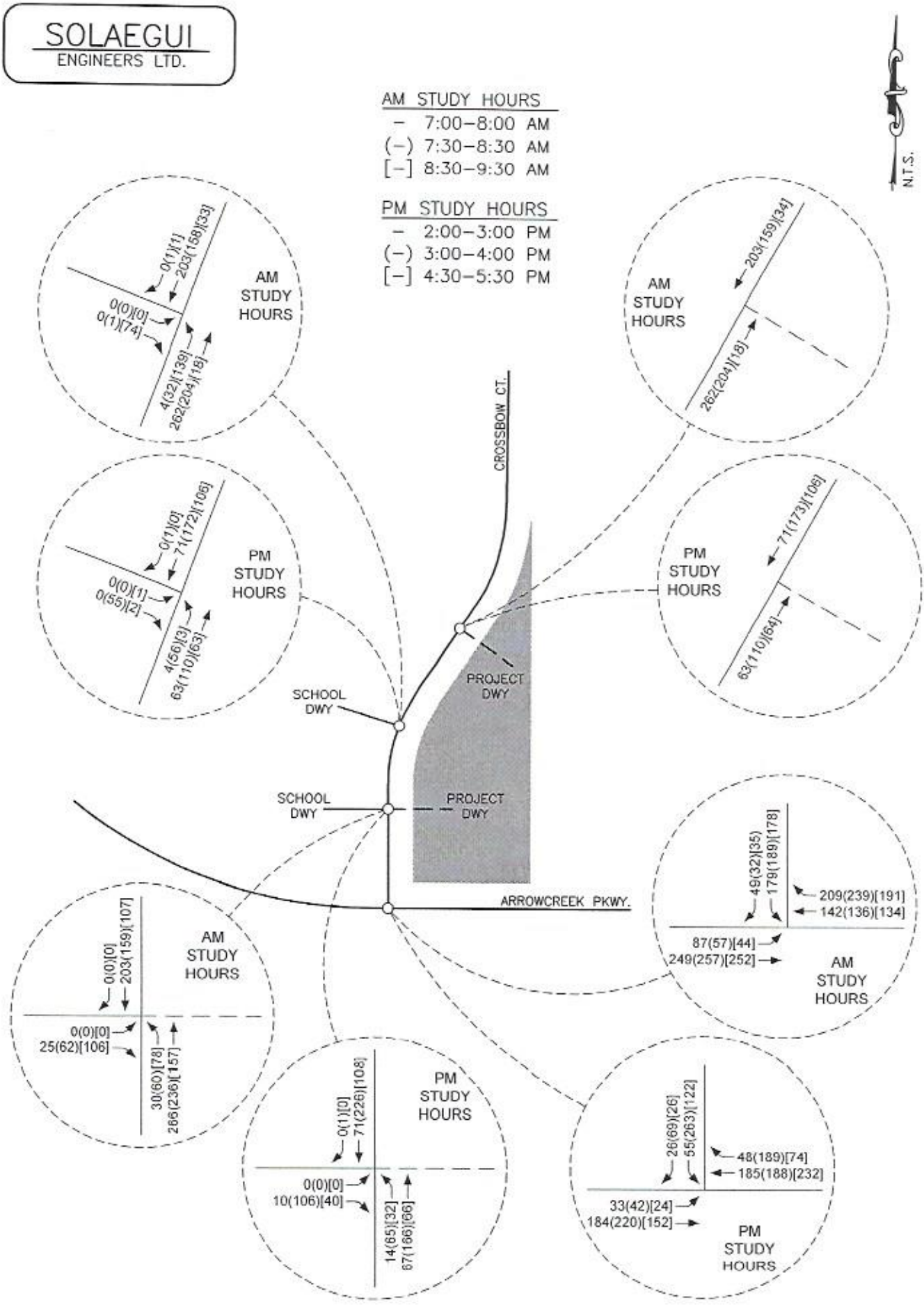

CONNECT NEIGHBORHOOD CENTER & GARDEN

EXISTING PLUS MIDDLE SCHOOL TRAFFIC VOLUMES

FIGURE 5

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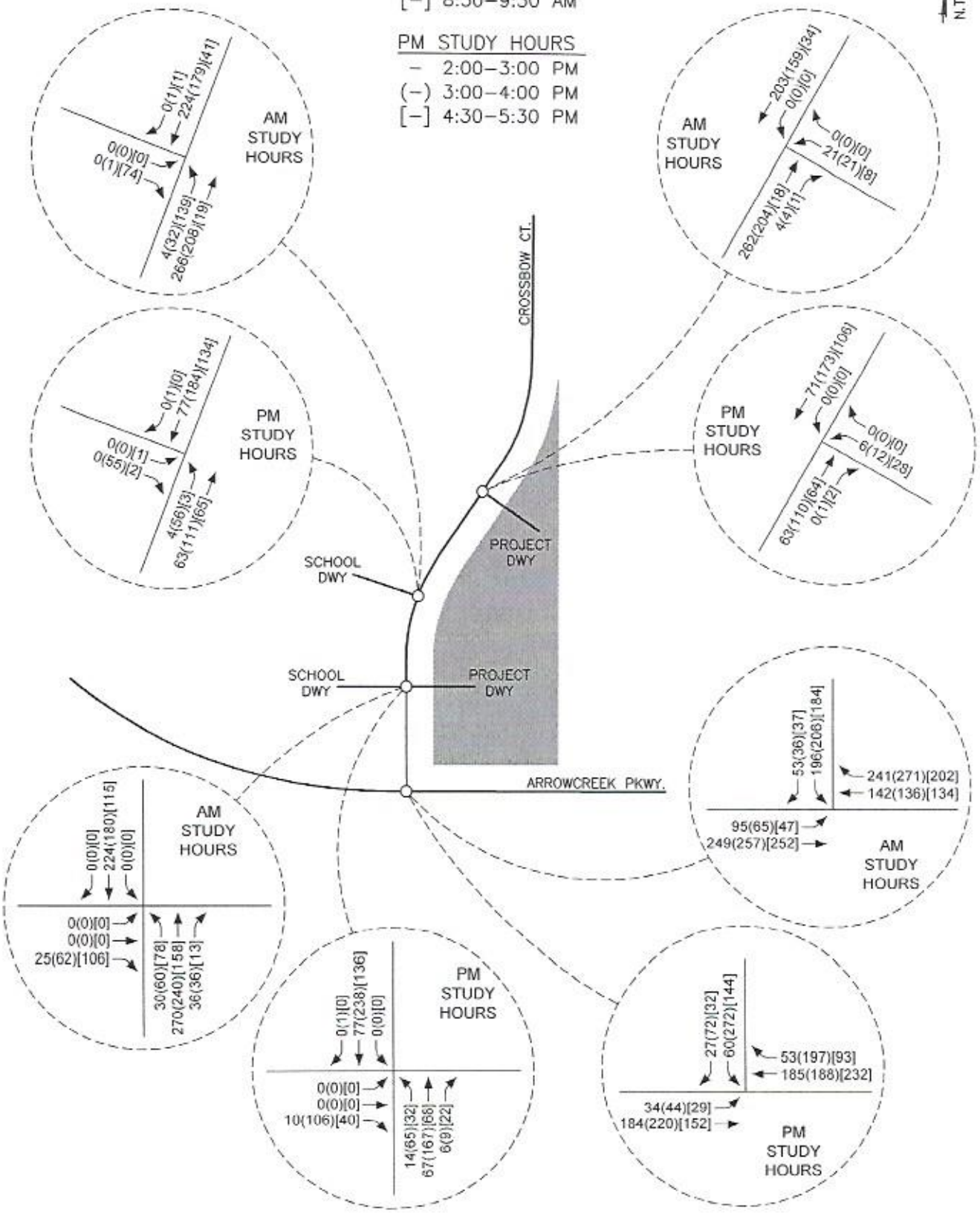
AM STUDY HOURS
- 7:00–8:00 AM
(–) 7:30–8:30 AM
[–] 8:30–9:30 AM

PM STUDY HOURS
- 2:00–3:00 PM
(–) 3:00–4:00 PM
[–] 4:30–5:30 PM

N.T.S.



CONNECT NEIGHBORHOOD CENTER & GARDEN

EXISTING PLUS MIDDLE SCHOOL PLUS PROJECT VOLUMES

FIGURE 6

INTERSECTION CAPACITY ANALYSIS

The key intersections were analyzed for capacity based on procedures presented in the *Highway Capacity Manual (6th Edition)*, prepared by the Transportation Research Board, for unsignalized intersections using the latest version of the Highway Capacity software. The result of capacity analysis is a level of service (LOS) rating for all-way stop controlled intersections and minor movements at partial stop controlled intersections. Level of service is a qualitative measure of traffic operating conditions where a letter grade "A" through "F", corresponding to progressively worsening traffic operation, is assigned to the intersection or minor movement.

The *Highway Capacity Manual* defines level of service for partial stop controlled intersections in terms of computed or measured control delay for each minor movement. Level of service is not defined for the partial stop controlled intersection as a whole. Level of service is defined for an all-way stop controlled intersection as a whole. The level of service criteria for unsignalized intersections is shown in Table 2.

TABLE 2
LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

LEVEL OF SERVICE	DELAY RANGE (SEC/VEH)
A	≤10
B	>10 and ≤15
C	>15 and ≤25
D	>25 and ≤35
E	>35 and ≤50
F	>50

Table 3A shows a summary of the level of service and delay results at the key intersections for the existing conditions. The capacity analysis worksheets are included in the Appendix.

TABLE 3A
INTERSECTION LEVEL OF SERVICE AND DELAY RESULTS
EXISTING CONDITIONS

	AM STUDY HOURS			PM STUDY HOURS		
INTERSECTION	7:00-8:00	7:30-8:30	8:30-9:30	2:00-3:00	3:00-4:00	4:30-5:30
Arrowcreek/Crossbow	B12.0	B14.9	B14.0	A8.6	C15.9	A9.4
Crossbow/South School Dwy						
EB Left-Right	A9.6	B10.4	B10.7	A8.4	B12.9	A9.4
NB Left	A7.8	A8.0	A8.0	A7.3	A8.4	A7.6
Crossbow/North School Dwy						
EB Left-Right	A0.0	A9.6	A9.2	A0.0	B10.5	A8.9
NB Left	A7.7	A7.9	A7.8	A7.2	A8.1	A7.4

Table 3B shows a summary of the level of service and delay results at the key intersections for the existing plus middle school scenario. The capacity analysis worksheets are included in the Appendix.

TABLE 3B
INTERSECTION LEVEL OF SERVICE AND DELAY RESULTS
EXISTING PLUS MIDDLE SCHOOL

	AM STUDY HOURS			PM STUDY HOURS		
INTERSECTION	7:00-8:00	7:30-8:30	8:30-9:30	2:00-3:00	3:00-4:00	4:30-5:30
Arrowcreek/Crossbow	C15.3	C16.4	B14.2	A9.4	C18.1	A9.7
Crossbow/South School Dwy						
EB Left-Right	B11.1	B11.0	B10.9	A8.7	B14.1	A9.8
NB Left	A8.3	A8.2	A8.0	A7.4	A8.7	A7.8
Crossbow/North School Dwy						
EB Left-Right	A0.0	B10.0	A9.2	A0.0	B11.1	A9.1
NB Left	A8.1	A8.1	A7.9	A7.4	A8.3	A7.5

Table 3C shows a summary of the level of service and delay results at the key intersections for the existing plus middle school plus project scenario. The capacity analysis worksheets are included in the Appendix.

TABLE 3C
INTERSECTION LEVEL OF SERVICE AND DELAY RESULTS
EXISTING PLUS MIDDLE SCHOOL PLUS PROJECT

	AM STUDY HOURS			PM STUDY HOURS		
INTERSECTION	7:00-8:00	7:30-8:30	8:30-9:30	2:00-3:00	3:00-4:00	4:30-5:30
Arrowcreek/Crossbow	C17.6	C19.5	B14.8	A9.5	C19.3	B10.1
Crossbow/South School Dwy/ South Project Driveway						
EB Left-Right	B11.4	B11.4	B11.0	A8.8	B14.5	B10.2
NB Left	A8.4	A8.3	A8.0	A7.4	A8.8	A7.9
Crossbow/North School Dwy						
EB Left-Right	A0.0	B10.3	A9.3	A0.0	B11.4	A9.3
NB Left	A8.3	A8.2	A7.9	A7.4	A8.3	A7.5
Crossbow/North Project Dwy						
WB Left-Right	B13.5	B12.0	A8.9	A9.5	B10.9	B10.0
SB Left	A0.0	A0.0	A0.0	A0.0	A0.0	A0.0

Arrowcreek Parkway/Crossbow Court Intersection

The Arrowcreek Parkway/Crossbow Court intersection was analyzed as an unsignalized three-leg intersection with all-way stop control for all scenarios. The intersection currently operates at LOS C or better during each of the AM and PM peak hour study periods. For the existing plus middle school traffic volumes the intersection is anticipated to operate at LOS C or better during each of the AM and PM peak hour study periods. For the existing plus middle school plus project traffic volumes the intersection is anticipated to operate at LOS C or better during each of the AM and PM peak hour study periods. The intersection was analyzed with the existing approach lanes for all scenarios. In summary, the intersection capacity results indicate acceptable operation, LOS C or better, during each of the AM and PM peak hour study periods for all scenarios. It should be noted that there were periods of congestion and additional delay at the intersection due to Hunsburger Elementary School. However, these periods were of short duration and are typical of elementary schools in the area. The peak hour factor used in the intersection capacity analysis accounted for the peak 15-minute traffic flows attributed to the school.

Crossbow Court/South Hunsburger Elementary School Driveway Intersection

The Crossbow Court/South Hunsburger Elementary School Driveway intersection was analyzed as an unsignalized three-leg intersection with stop control at the west approach for the existing and existing plus middle school scenarios. The intersection minor movements currently operate at LOS B or better during each AM and PM peak hour study period. For the existing plus middle school traffic volumes the intersection minor movements continue to operate at LOS B or better during each AM and PM peak hour study period. The three-leg intersection was analyzed with the existing approach lanes. The Crossbow Court/South Hunsburger Elementary School Driveway/ South Project Driveway intersection was subsequently analyzed as an unsignalized four-leg intersection for the existing plus middle school plus project scenario and is anticipated to operate at LOS B or better during each AM and PM peak hour study period. The four-leg intersection was analyzed with single lanes at the north, south and west approaches. In summary, the intersection capacity results indicate acceptable operation, LOS C or better, during each of the AM and PM peak hour study periods for all scenarios. Again, it should be noted that there were periods of congestion and additional delay at the driveway directly before the starting bell and directly after the dismissal bell. However, these periods were of short duration and are typical of elementary schools in the area. The peak hour factor used in the intersection capacity analysis accounted for the peak 15-minute traffic flows attributed to the school.

Crossbow Court/North Hunsburger Elementary School Driveway Intersection

The Crossbow Court/North Hunsburger Elementary School Driveway intersection was analyzed as an unsignalized three-leg intersection with stop control at the west approach for all scenarios. The intersection minor movements currently operate at LOS B or better during each AM and PM peak hour study period. For the existing plus middle school traffic volumes the intersection minor movements are anticipated to operate at LOS B or better during each AM and PM peak hour study period. For the existing plus middle school plus project traffic volumes the intersection minor movements are anticipated to continue to operate at LOS B or better during each AM and PM peak hour study period. The intersection was analyzed with the existing approach lanes for all scenarios.

In summary, the intersection capacity results indicate acceptable operation, LOS C or better, during each of the AM and PM peak hour study periods for all scenarios. Again, it should be noted that there were periods of congestion and additional delay at the driveway directly before the starting bell and directly after the dismissal bell. However, these periods were of short duration and are typical of elementary schools in the area. The peak hour factor used in the intersection capacity analysis accounted for the peak 15-minute traffic flows attributed to the school.

Crossbow Court/North Project Driveway Intersection

The Crossbow Court/North Project Driveway intersection was analyzed as an unsignalized three-leg intersection with stop control at the east approach for the existing plus middle school plus project scenario. The intersection minor movements are anticipated to operate at LOS B or better during each of the AM and PM peak hour study periods. The three-leg intersection was analyzed with single lanes at all approaches.

SCHOOL PEDESTRIAN REVIEW

Existing school pedestrians were reviewed during each of the AM and PM study periods. Site observations indicated very little pedestrian activity during the various study periods except for the 8:30 to 9:30 AM and 3:00 to 4:00 PM study periods which correspond to the morning and afternoon peak hours of Hunsburger Elementary School. Existing counts showed 23 pedestrians crossing the west leg and 2 pedestrians crossing the north leg of the Arrowcreek Parkway/Crossbow Court intersection before school and 26 pedestrians crossing the west leg and 5 pedestrians crossing the north leg after school. Hunsburger Elementary School staff performed crossing guard duties at the intersection with the majority of students required to wait so that the crossing was completed in a large group. The school staff provided a managed crossing of Arrowcreek Parkway with little disruption in traffic operation. It should be noted that all elementary school pedestrians were observed using the dirt pedestrian path that runs from the school's interior sidewalk system to the northwest corner of the Arrowcreek Parkway/Crossbow Court intersection. No school pedestrians were observed crossing the existing school driveways on the west side of Crossbow Court.

The proposed Connect Neighborhood Center development is also anticipated to generate school pedestrians. It is our understanding that approximately 25 students that attend either Hunsburger Elementary School or Sage Ridge School will utilize the Connect Neighborhood Center's before and after school programs. The students that are enrolled in the before school program will arrive with a parent who will attend a concurrent adult program. Upon completion of the program the parent will walk their child to either Hunsburger Elementary School or Sage Ridge School, walk back to the center, and then depart the site in their vehicle. The students who are enrolled in the after school program will be picked up at either Hunsburger Elementary School or Sage Ridge School by their parent who has previously parked the vehicle in the Connect Neighborhood Center's parking lot. The child and parent will walk together back to the center and depart in their vehicle. It is anticipated that parents will not be permitted to drive back and forth between the center and the adjacent schools. All children walking between the project and the adjacent schools will be accompanied by an adult.

A pedestrian crosswalk currently exists at the north leg of the Arrowcreek Parkway/Crossbow Court intersection which should be utilized to access Hunsburger Elementary School. A pedestrian crosswalk also exists at the south leg of the Crossbow Court/South Sage Ridge School driveway intersection which could be utilized to access Sage Ridge School. However, the middle school's proposed driveway is anticipated to intersect Crossbow Court at this location which may result in the relocation or elimination of the pedestrian crosswalk. It is therefore suggested that all pedestrian activity between Connect Neighborhood Center and Hunsburger Elementary School and Sage Ridge School utilize the existing pedestrian crosswalk at the north leg of the Arrowcreek Parkway/Crossbow Court intersection. It is recommended that the project developers implement a pedestrian circulation plan that clearly shows the walking routes between the proposed Connect Neighborhood Center and Hunsburger Elementary School and Sage Ridge School.

SITE PLAN REVIEW

A copy of the conceptual site plan for the proposed Connect Neighborhood Center & Garden development is included in this submittal. The site plan indicates that project access will be provided from two proposed driveways on Crossbow Court. The project driveways were subsequently reviewed for spacing based on Washoe County development standards. Crossbow Court appears to have a 52 feet right-of way width which signifies a collector designation per Washoe County street design standards. Washoe County Street Design Standards indicate that the center to center spacing for driveways on commercial collectors shall be a minimum of 50 feet. The site plan indicates that the south project driveway will generally align with the southerly Hunsburger Elementary School driveway and be located ±225 feet north of Arrowcreek Parkway and ±150 south of the northerly Hunsburger Elementary School driveway. The north project driveway will be located ±240 feet north of the northerly Hunsburger Elementary School driveway and more than 350 feet south of the adjacent Sage Ridge School driveway. The proposed project driveways will meet Washoe County's 50 foot spacing requirement.

The site plan indicates that the south project driveway will serve ingress-only movements and the north project driveway will serve full turning movements. An on-site roadway will provide a connection between the two driveways and will also provide direct access to the project's parking lot. The on-site roadway will be a one-way ingress only street between the south project driveway on Crossbow Court and the north parking lot access and then transition to a two-way street between the north parking lot access and the north project driveway on Crossbow Court. The parking lot will also serve two-way traffic. The project driveways, on-site roadways, and parking lot are anticipated to provide good access and internal circulation. It is recommended that project driveways, on-site roadways, and parking lot be designed to conform to Washoe County standards. It is recommended that adequate signing and striping improvements be installed at the project driveways and on-site roadways in order to inform motorists of their intended operation.

RECOMMENDATIONS

Traffic generated by the proposed Connect Neighborhood Center & Garden development will have some impact on the adjacent street network. The following recommendations are made to mitigate project traffic impacts.

It is recommended that any required signing, striping or traffic control improvements comply with Washoe County requirements.

It is recommended that the north project driveway on Crossbow Court be designed to operate with stop sign control at the driveway approach and include single ingress and egress lanes.

It is recommended that the south project driveway on Crossbow Court be designed to serve ingress-only movements and include a single one-way ingress lane.

It is recommended that project driveways, on-site roadways, and parking lot be designed to conform to Washoe County standards.

It is recommended that adequate on-site signing and striping improvements be installed at the project driveways and internal roadways in order to inform motorists of their intended operation.

It is recommended that the project developers implement a pedestrian circulation plan that clearly shows the walking routes between the proposed Connect Neighborhood Center and Hunsburger Elementary and Sage Ridge schools.

APPENDIX

Recreational Community Center
(495)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

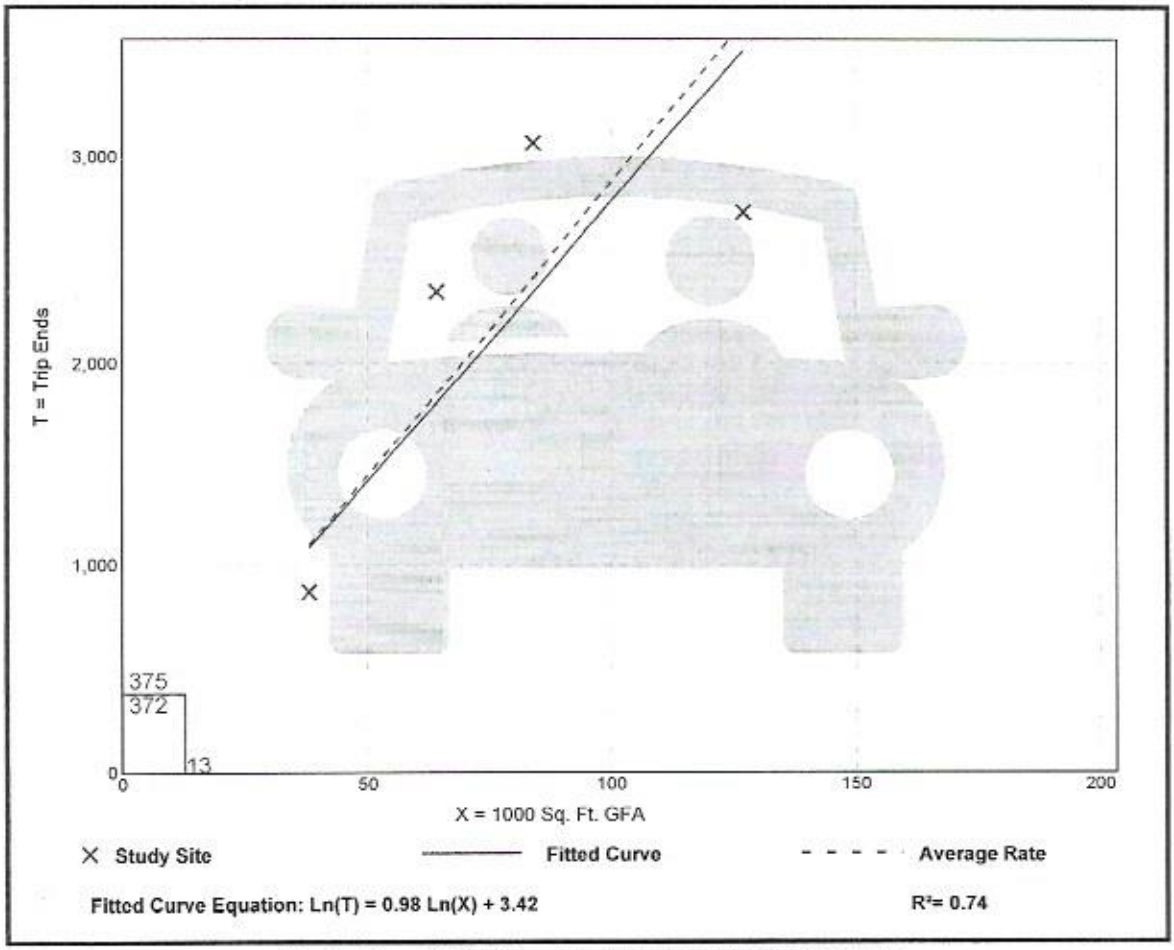
Setting/Location: General Urban/Suburban
Number of Studies: 4
Avg. 1000 Sq. Ft. GFA: 78
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
28.82	21.49 - 36.71	8.56

Data Plot and Equation

Caution – Small Sample Size



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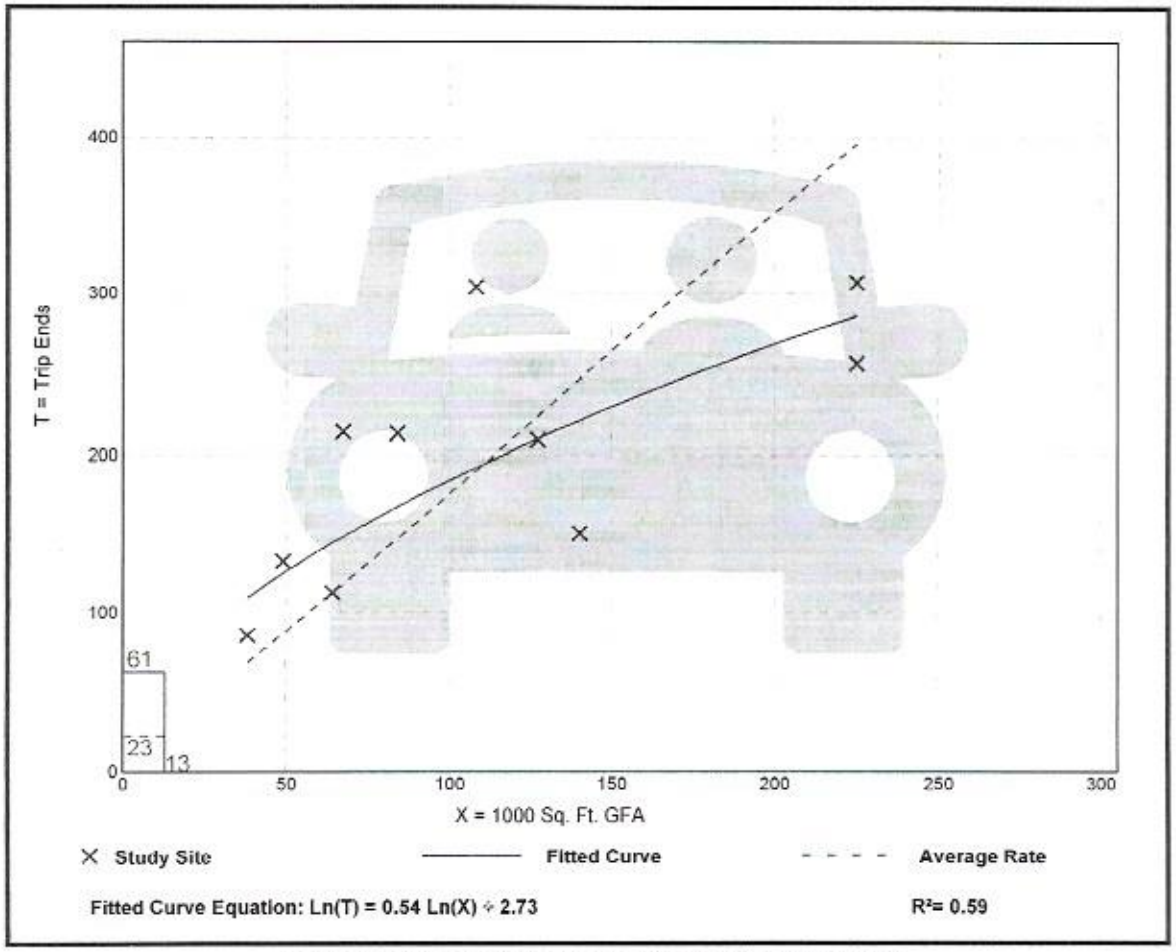
Recreational Community Center
(495)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 10
Avg. 1000 Sq. Ft. GFA: 113
Directional Distribution: 66% entering, 34% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.76	1.08 - 3.18	0.74

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.54 Ln(X) + 2.73 **R^2= 0.59**

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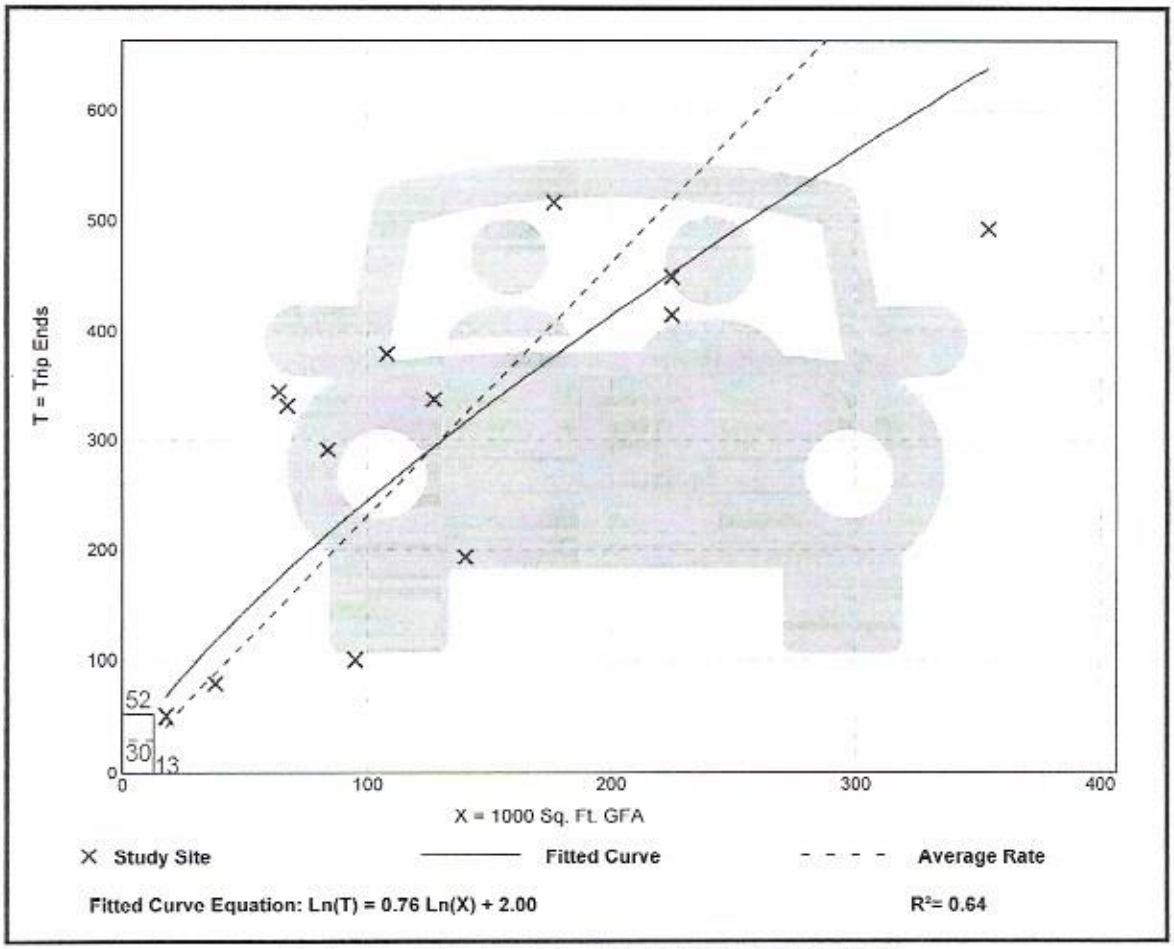
Recreational Community Center
(495)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 13
Avg. 1000 Sq. Ft. GFA: 132
Directional Distribution: 47% entering, 53% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
2.31	1.05 - 5.37	1.14

Data Plot and Equation



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HCS7 All-Way Stop Control Report

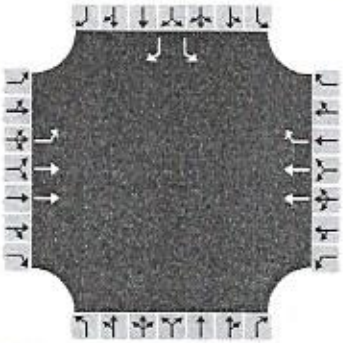
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Analysis Time Period (hrs)	0.25
Time Analyzed	Existing
Project Description	7:00-8:00 AM

Site Information

Intersection	Arrowcreek & Crossbow
Jurisdiction	Washoe County
East/West Street	Arrowcreek Parkway
North/South Street	Crossbow Court
Peak Hour Factor	0.70

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	25	249			129	199				118		11
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	T	T	T	R				L	R	
Flow Rate, v (veh/h)	36	178	178	92	92	284				169	16	
Percent Heavy Vehicles	2	2	2	2	2	2				2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20				3.20	3.20	
Initial Degree of Utilization, x	0.032	0.158	0.158	0.082	0.082	0.253				0.150	0.014	
Final Departure Headway, hd (s)	6.88	6.37	6.37	6.29	6.29	5.58				7.41	6.21	
Final Degree of Utilization, x	0.068	0.315	0.315	0.161	0.161	0.441				0.347	0.027	
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3				2.3	2.3	
Service Time, ts (s)	4.58	4.07	4.07	3.99	3.99	3.28				5.11	3.91	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	36	178	178	92	92	284				169	16	
Capacity	524	565	565	573	573	645				486	580	
95% Queue Length, Q_{95} (veh)	0.2	1.3	1.3	0.6	0.6	2.3				1.5	0.1	
Control Delay (s/veh)	10.1	12.0	12.0	10.2	10.2	12.6				14.0	9.1	
Level of Service, LOS	B	B	B	B	B	B				B	A	
Approach Delay (s/veh)	11.8			11.7						13.6		
Approach LOS	B			B						B		
Intersection Delay, s/veh | LOS	12.0						B					

HCS7 All-Way Stop Control Report

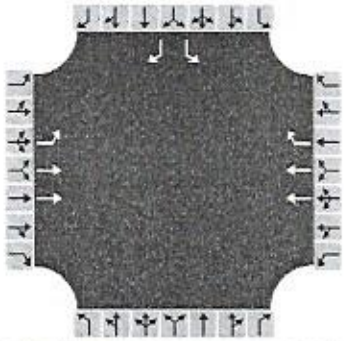
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Analysis Time Period (hrs)	0.25
Time Analyzed	Existing
Project Description	7:30-8:30 AM

Site Information

Intersection	Arrowcreek & Crossbow
Jurisdiction	Washoe County
East/West Street	Arrowcreek Parkway
North/South Street	Crossbow Court
Peak Hour Factor	0.70

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	36	257			132	236				169		19
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	T	T	T	R				L	R	
Flow Rate, v (veh/h)	51	184	184	94	94	337				241	27	
Percent Heavy Vehicles	2	2	2	2	2	2				2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20				3.20	3.20	
Initial Degree of Utilization, x	0.046	0.163	0.163	0.084	0.084	0.300				0.215	0.024	
Final Departure Headway, hd (s)	7.49	6.98	6.98	6.84	6.84	6.12				7.79	6.59	
Final Degree of Utilization, x	0.107	0.356	0.356	0.179	0.179	0.573				0.523	0.050	
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3				2.3	2.3	
Service Time, ts (s)	5.19	4.68	4.68	4.54	4.54	3.82				5.49	4.29	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	51	184	184	94	94	337				241	27	
Capacity	481	516	516	527	527	588				462	547	
95% Queue Length, Q_{95} (veh)	0.4	1.6	1.6	0.6	0.6	3.6				3.0	0.2	
Control Delay (s/veh)	11.1	13.5	13.5	11.0	11.0	16.7				18.7	9.6	
Level of Service, LOS	B	B	B	B	B	C				C	A	
Approach Delay (s/veh)	13.2			14.7						17.8		
Approach LOS	B			B						C		
Intersection Delay, s/veh | LOS	14.9						B					

HCS7 All-Way Stop Control Report

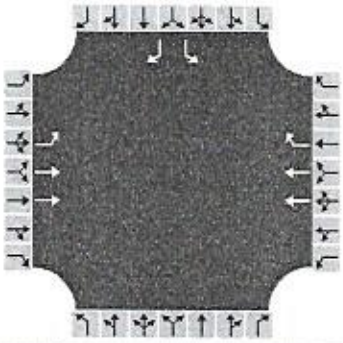
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Analysis Time Period (hrs)	0.25
Time Analyzed	Existing
Project Description	8:30-9:30 AM

Site Information

Intersection	Arrowcreek & Crossbow
Jurisdiction	Washoe County
East/West Street	Arrowcreek Parkway
North/South Street	Crossbow Court
Peak Hour Factor	0.70

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	39	252			133	190				174		32
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	T	T	T	R				L	R	
Flow Rate, v (veh/h)	56	180	180	95	95	271				249	46	
Percent Heavy Vehicles	2	2	2	2	2	2				2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20				3.20	3.20	
Initial Degree of Utilization, x	0.050	0.160	0.160	0.084	0.084	0.241				0.221	0.041	
Final Departure Headway, hd (s)	7.42	6.91	6.91	6.87	6.87	6.16				7.63	6.42	
Final Degree of Utilization, x	0.115	0.345	0.345	0.181	0.181	0.464				0.527	0.082	
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3				2.3	2.3	
Service Time, ts (s)	5.12	4.61	4.61	4.57	4.57	3.86				5.33	4.12	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	56	180	180	95	95	271				249	46	
Capacity	485	521	521	524	524	584				472	561	
95% Queue Length, Q_{95} (veh)	0.4	1.5	1.5	0.7	0.7	2.4				3.0	0.3	
Control Delay (s/veh)	11.1	13.2	13.2	11.1	11.1	14.1				18.5	9.7	
Level of Service, LOS	B	B	B	B	B	B				C	A	
Approach Delay (s/veh)	12.9			12.9						17.1		
Approach LOS	B			B						C		
Intersection Delay, s/veh | LOS	14.0						B					

HCS7 All-Way Stop Control Report

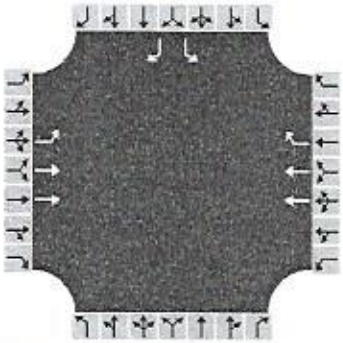
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Analysis Time Period (hrs)	0.25
Time Analyzed	Existing
Project Description	2:00-3:00 PM

Site Information

Intersection	Arrowcreek & Crossbow
Jurisdiction	Washoe County
East/West Street	Arrowcreek Parkway
North/South Street	Crossbow Court
Peak Hour Factor	0.85

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	3	184			177	44				16		2
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	T	T	T	R				L	R	
Flow Rate, v (veh/h)	4	108	108	104	104	52				19	2	
Percent Heavy Vehicles	2	2	2	2	2	2				2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20				3.20	3.20	
Initial Degree of Utilization, x	0.003	0.096	0.096	0.093	0.093	0.046				0.017	0.002	
Final Departure Headway, hd (s)	5.61	5.11	5.11	5.06	5.06	4.36				6.24	5.04	
Final Degree of Utilization, x	0.006	0.154	0.154	0.146	0.146	0.063				0.033	0.003	
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3				2.3	2.3	
Service Time, ts (s)	3.31	2.81	2.81	2.76	2.76	2.06				3.94	2.74	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	4	108	108	104	104	52				19	2	
Capacity	642	704	704	712	712	826				577	714	
95% Queue Length, Q_{95} (veh)	0.0	0.5	0.5	0.5	0.5	0.2				0.1	0.0	
Control Delay (s/veh)	8.3	8.7	8.7	8.6	8.6	7.3				9.1	7.8	
Level of Service, LOS	A	A	A	A	A	A				A	A	
Approach Delay (s/veh)	8.7			8.4						9.0		
Approach LOS	A			A						A		
Intersection Delay, s/veh | LOS	8.6						A					

HCS7 All-Way Stop Control Report

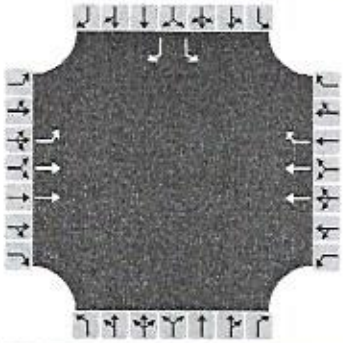
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Analysis Time Period (hrs)	0.25
Time Analyzed	Existing
Project Description	3:00-4:00 PM

Site Information

Intersection	Arrowcreek & Crossbow
Jurisdiction	Washoe County
East/West Street	Arrowcreek Parkway
North/South Street	Crossbow Court
Peak Hour Factor	0.75

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	25	220			184	187				240		55
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	T	T	T	R				L	R	
Flow Rate, v (veh/h)	33	147	147	123	123	249				320	73	
Percent Heavy Vehicles	2	2	2	2	2	2				2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20				3.20	3.20	
Initial Degree of Utilization, x	0.030	0.130	0.130	0.109	0.109	0.222				0.284	0.065	
Final Departure Headway, hd (s)	7.92	7.41	7.41	7.12	7.12	6.40				7.59	6.39	
Final Degree of Utilization, x	0.073	0.302	0.302	0.243	0.243	0.443				0.675	0.130	
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3				2.3	2.3	
Service Time, ts (s)	5.62	5.11	5.11	4.82	4.82	4.10				5.29	4.09	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	33	147	147	123	123	249				320	73	
Capacity	454	486	486	506	506	562				474	564	
95% Queue Length, Q_{95} (veh)	0.2	1.3	1.3	0.9	0.9	2.3				5.0	0.4	
Control Delay (s/veh)	11.3	13.3	13.3	12.1	12.1	14.1				24.6	10.0	
Level of Service, LOS	B	B	B	B	B	B				C	B	
Approach Delay (s/veh)	13.1			13.1						21.9		
Approach LOS	B			B						C		
Intersection Delay, s/veh | LOS	15.9						C					

HCS7 All-Way Stop Control Report

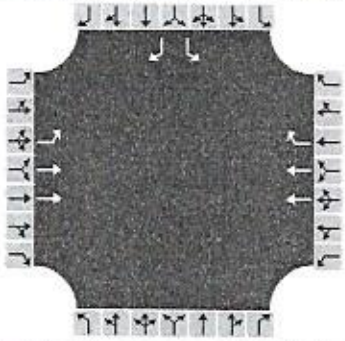
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Analysis Time Period (hrs)	0.25
Time Analyzed	Existing
Project Description	4:30-5:30 PM

Site Information

Intersection	Arrowcreek & Crossbow
Jurisdiction	Washoe County
East/West Street	Arrowcreek Parkway
North/South Street	Crossbow Court
Peak Hour Factor	0.90

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	8	152			228	72				101		13
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	T	T	T	R				L	R	
Flow Rate, v (veh/h)	9	84	84	127	127	80				112	14	
Percent Heavy Vehicles	2	2	2	2	2	2				2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20				3.20	3.20	
Initial Degree of Utilization, x	0.008	0.075	0.075	0.113	0.113	0.071				0.100	0.013	
Final Departure Headway, hd (s)	6.18	5.68	5.68	5.41	5.41	4.71				6.38	5.18	
Final Degree of Utilization, x	0.015	0.133	0.133	0.190	0.190	0.105				0.199	0.021	
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3				2.3	2.3	
Service Time, ts (s)	3.88	3.38	3.38	3.11	3.11	2.41				4.08	2.88	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	9	84	84	127	127	80				112	14	
Capacity	583	634	634	666	666	765				565	695	
95% Queue Length, Q_{95} (veh)	0.0	0.5	0.5	0.7	0.7	0.3				0.7	0.1	
Control Delay (s/veh)	9.0	9.2	9.2	9.4	9.4	8.0				10.7	8.0	
Level of Service, LOS	A	A	A	A	A	A				B	A	
Approach Delay (s/veh)	9.2			9.0						10.3		
Approach LOS	A			A						B		
Intersection Delay, s/veh | LOS	9.4						A					

HCS7 All-Way Stop Control Report

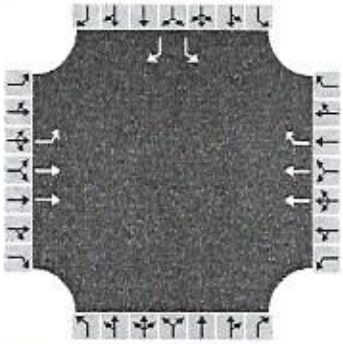
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Analysis Time Period (hrs)	0.25
Time Analyzed	Existing + M.S.
Project Description	7:00-8:00 AM

Site Information

Intersection	Arrowcreek & Crossbow
Jurisdiction	Washoe County
East/West Street	Arrowcreek Parkway
North/South Street	Crossbow Court
Peak Hour Factor	0.70

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	87	249			142	209				179		49
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	T	T	T	R				L	R	
Flow Rate, v (veh/h)	124	178	178	101	101	299				256	70	
Percent Heavy Vehicles	2	2	2	2	2	2				2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20				3.20	3.20	
Initial Degree of Utilization, x	0.110	0.158	0.158	0.090	0.090	0.265				0.227	0.062	
Final Departure Headway, hd (s)	7.74	7.23	7.23	7.24	7.24	6.53				8.02	6.81	
Final Degree of Utilization, x	0.267	0.357	0.357	0.204	0.204	0.541				0.569	0.132	
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3				2.3	2.3	
Service Time, ts (s)	5.44	4.93	4.93	4.94	4.94	4.23				5.72	4.51	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	124	178	178	101	101	299				256	70	
Capacity	465	498	498	497	497	552				449	529	
95% Queue Length, Q_{95} (veh)	1.1	1.6	1.6	0.8	0.8	3.2				3.5	0.5	
Control Delay (s/veh)	13.2	13.9	13.9	11.8	11.8	16.7				20.8	10.5	
Level of Service, LOS	B	B	B	B	B	C				C	B	
Approach Delay (s/veh)	13.7			14.7						18.6		
Approach LOS	B			B						C		
Intersection Delay, s/veh | LOS	15.3						C					

HCS7 All-Way Stop Control Report

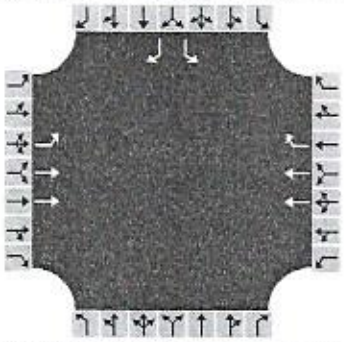
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Analysis Time Period (hrs)	0.25
Time Analyzed	Existing + M.S.
Project Description	7:30-8:30 AM

Site Information

Intersection	Arrowcreek & Crossbow
Jurisdiction	Washoe County
East/West Street	Arrowcreek Parkway
North/South Street	Crossbow Court
Peak Hour Factor	0.70

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	57	257			136	239				189		32
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	T	T	T	R				L	R	
Flow Rate, v (veh/h)	81	184	184	97	97	341				270	46	
Percent Heavy Vehicles	2	2	2	2	2	2				2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20				3.20	3.20	
Initial Degree of Utilization, x	0.072	0.163	0.163	0.086	0.086	0.303				0.240	0.041	
Final Departure Headway, hd (s)	7.81	7.30	7.30	7.18	7.18	6.47				8.02	6.82	
Final Degree of Utilization, x	0.177	0.372	0.372	0.194	0.194	0.613				0.602	0.087	
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3				2.3	2.3	
Service Time, ts (s)	5.51	5.00	5.00	4.88	4.88	4.17				5.72	4.52	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	81	184	184	97	97	341				270	46	
Capacity	461	493	493	501	501	557				449	528	
95% Queue Length, Q_{95} (veh)	0.6	1.7	1.7	0.7	0.7	4.1				3.9	0.3	
Control Delay (s/veh)	12.2	14.3	14.3	11.6	11.6	18.9				22.1	10.2	
Level of Service, LOS	B	B	B	B	B	C				C	B	
Approach Delay (s/veh)	13.9			16.2						20.4		
Approach LOS	B			C						C		
Intersection Delay, s/veh | LOS	16.4						C					

HCS7 All-Way Stop Control Report

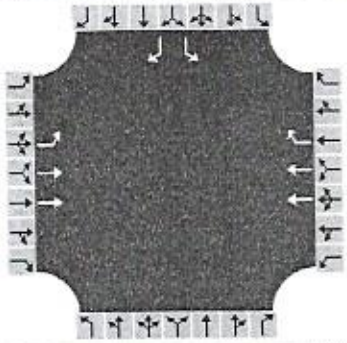
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Analysis Time Period (hrs)	0.25
Time Analyzed	Existing + M.S.
Project Description	8:30-9:30 AM

Site Information

Intersection	Arrowcreek & Crossbow
Jurisdiction	Washoe County
East/West Street	Arrowcreek Parkway
North/South Street	Crossbow Court
Peak Hour Factor	0.70

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	44	252			134	191				178		35
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	T	T	T	R				L	R	
Flow Rate, v (veh/h)	63	180	180	96	96	273				254	50	
Percent Heavy Vehicles	2	2	2	2	2	2				2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20				3.20	3.20	
Initial Degree of Utilization, x	0.056	0.160	0.160	0.085	0.085	0.243				0.226	0.044	
Final Departure Headway, hd (s)	7.48	6.96	6.96	6.94	6.94	6.23				7.67	6.46	
Final Degree of Utilization, x	0.131	0.348	0.348	0.185	0.185	0.472				0.542	0.090	
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3				2.3	2.3	
Service Time, ts (s)	5.18	4.66	4.66	4.64	4.64	3.93				5.37	4.16	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	63	180	180	96	96	273				254	50	
Capacity	482	517	517	519	519	578				469	557	
95% Queue Length, Q_{95} (veh)	0.4	1.5	1.5	0.7	0.7	2.5				3.2	0.3	
Control Delay (s/veh)	11.3	13.3	13.3	11.2	11.2	14.4				19.1	9.8	
Level of Service, LOS	B	B	B	B	B	B				C	A	
Approach Delay (s/veh)	13.0			13.1						17.5		
Approach LOS	B			B						C		
Intersection Delay, s/veh | LOS	14.2						B					

HCS7 All-Way Stop Control Report

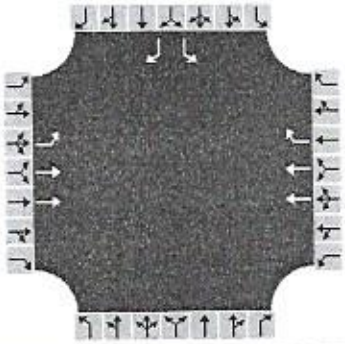
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Analysis Time Period (hrs)	0.25
Time Analyzed	Existing + M.S.
Project Description	2:00-3:00 PM

Site Information

Intersection	Arrowcreek & Crossbow
Jurisdiction	Washoe County
East/West Street	Arrowcreek Parkway
North/South Street	Crossbow Court
Peak Hour Factor	0.75

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	33	184			185	48				55		26
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	T	T	T	R				L	R	
Flow Rate, v (veh/h)	44	123	123	123	123	64				73	35	
Percent Heavy Vehicles	2	2	2	2	2	2				2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20				3.20	3.20	
Initial Degree of Utilization, x	0.039	0.109	0.109	0.110	0.110	0.057				0.065	0.031	
Final Departure Headway, hd (s)	6.08	5.57	5.57	5.56	5.56	4.85				6.62	5.42	
Final Degree of Utilization, x	0.074	0.190	0.190	0.190	0.190	0.086				0.135	0.052	
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3				2.3	2.3	
Service Time, ts (s)	3.78	3.27	3.27	3.26	3.26	2.55				4.32	3.12	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	44	123	123	123	123	64				73	35	
Capacity	592	646	646	648	648	742				544	664	
95% Queue Length, Q_{95}, (veh)	0.2	0.7	0.7	0.7	0.7	0.3				0.5	0.2	
Control Delay (s/veh)	9.3	9.6	9.6	9.6	9.6	8.0				10.3	8.4	
Level of Service, LOS	A	A	A	A	A	A				B	A	
Approach Delay (s/veh)	9.5			9.2						9.7		
Approach LOS	A			A						A		
Intersection Delay, s/veh | LOS	9.4						A					

HCS7 All-Way Stop Control Report

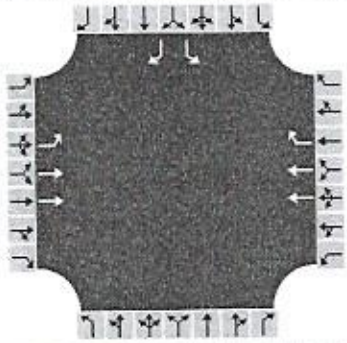
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Analysis Time Period (hrs)	0.25
Time Analyzed	Existing + M.S.
Project Description	3:00-4:00 PM

Site Information

Intersection	Arrowcreek & Crossbow
Jurisdiction	Washoe County
East/West Street	Arrowcreek Parkway
North/South Street	Crossbow Court
Peak Hour Factor	0.75

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	42	220			188	189				263		69
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	T	T	T	R				L	R	
Flow Rate, v (veh/h)	56	147	147	125	125	252				351	92	
Percent Heavy Vehicles	2	2	2	2	2	2				2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20				3.20	3.20	
Initial Degree of Utilization, x	0.050	0.130	0.130	0.111	0.111	0.224				0.312	0.082	
Final Departure Headway, hd (s)	8.19	7.68	7.68	7.41	7.41	6.69				7.75	6.55	
Final Degree of Utilization, x	0.127	0.313	0.313	0.258	0.258	0.468				0.755	0.167	
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3				2.3	2.3	
Service Time, ts (s)	5.89	5.38	5.38	5.11	5.11	4.39				5.45	4.25	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	56	147	147	125	125	252				351	92	
Capacity	439	469	469	486	486	538				464	550	
95% Queue Length, Q_{95} (veh)	0.4	1.3	1.3	1.0	1.0	2.5				6.4	0.6	
Control Delay (s/veh)	12.1	13.8	13.8	12.7	12.7	15.1				30.7	10.6	
Level of Service, LOS	B	B	B	B	B	C				D	B	
Approach Delay (s/veh)	13.6			13.9						26.5		
Approach LOS	B			B						D		
Intersection Delay, s/veh | LOS	18.1						C					

HCS7 All-Way Stop Control Report

General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Analysis Time Period (hrs)	0.25
Time Analyzed	Existing + M.S.
Project Description	4:30-5:30 PM

Site Information

Intersection	Arrowcreek & Crossbow
Jurisdiction	Washoe County
East/West Street	Arrowcreek Parkway
North/South Street	Crossbow Court
Peak Hour Factor	0.90

Lanes

Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	24	152			232	74				122		26
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	T	T	T	R				L	R	
Flow Rate, v (veh/h)	27	84	84	129	129	82				136	29	
Percent Heavy Vehicles	2	2	2	2	2	2				2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20				3.20	3.20	
Initial Degree of Utilization, x	0.024	0.075	0.075	0.115	0.115	0.073				0.120	0.026	
Final Departure Headway, hd (s)	6.35	5.84	5.84	5.60	5.60	4.89				6.47	5.28	
Final Degree of Utilization, x	0.047	0.137	0.137	0.200	0.200	0.112				0.244	0.042	
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3				2.3	2.3	
Service Time, ts (s)	4.05	3.54	3.54	3.30	3.30	2.59				4.17	2.98	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	27	84	84	129	129	82				136	29	
Capacity	567	616	616	643	643	736				556	682	
95% Queue Length, Q_{95} (veh)	0.1	0.5	0.5	0.7	0.7	0.4				0.9	0.1	
Control Delay (s/veh)	9.4	9.5	9.5	9.7	9.7	8.2				11.2	8.2	
Level of Service, LOS	A	A	A	A	A	A				B	A	
Approach Delay (s/veh)	9.5			9.3						10.7		
Approach LOS	A			A						B		
Intersection Delay, s/veh | LOS	9.7						A					

HCS7 All-Way Stop Control Report

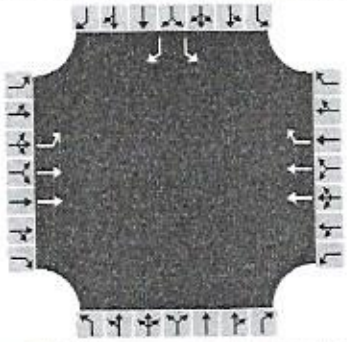
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Analysis Time Period (hrs)	0.25
Time Analyzed	Existing + M.S. + Project
Project Description	7:00-8:00 AM

Site Information

Intersection	Arrowcreek & Crossbow
Jurisdiction	Washoe County
East/West Street	Arrowcreek Parkway
North/South Street	Crossbow Court
Peak Hour Factor	0.70

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	95	249			142	241				196		53
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	T	T	T	R				L	R	
Flow Rate, v (veh/h)	136	178	178	101	101	344				280	76	
Percent Heavy Vehicles	2	2	2	2	2	2				2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20				3.20	3.20	
Initial Degree of Utilization, x	0.121	0.158	0.158	0.090	0.090	0.306				0.249	0.067	
Final Departure Headway, hd (s)	8.05	7.54	7.54	7.48	7.48	6.76				8.25	7.05	
Final Degree of Utilization, x	0.303	0.372	0.372	0.211	0.211	0.647				0.642	0.148	
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3				2.3	2.3	
Service Time, ts (s)	5.75	5.24	5.24	5.18	5.18	4.46				5.95	4.75	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	136	178	178	101	101	344				280	76	
Capacity	447	478	478	481	481	532				436	511	
95% Queue Length, Q_{95} (veh)	1.3	1.7	1.7	0.8	0.8	4.6				4.4	0.5	
Control Delay (s/veh)	14.2	14.6	14.6	12.2	12.2	21.0				24.6	11.0	
Level of Service, LOS	B	B	B	B	B	C				C	B	
Approach Delay (s/veh)	14.5			17.7						21.7		
Approach LOS	B			C						C		
Intersection Delay, s/veh | LOS	17.6						C					

HCS7 All-Way Stop Control Report

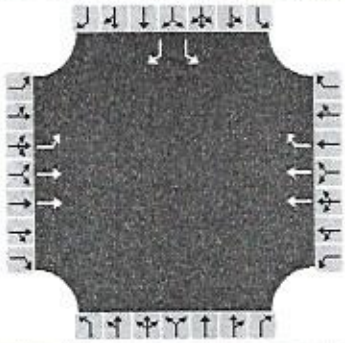
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Analysis Time Period (hrs)	0.25
Time Analyzed	Existing + M.S. + Project
Project Description	7:30-8:30 AM

Site Information

Intersection	Arrowcreek & Crossbow
Jurisdiction	Washoe County
East/West Street	Arrowcreek Parkway
North/South Street	Crossbow Court
Peak Hour Factor	0.70

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	65	257			136	271				206		36
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	T	T	T	R				L	R	
Flow Rate, v (veh/h)	93	184	184	97	97	387				294	51	
Percent Heavy Vehicles	2	2	2	2	2	2				2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20				3.20	3.20	
Initial Degree of Utilization, x	0.083	0.163	0.163	0.086	0.086	0.344				0.262	0.046	
Final Departure Headway, hd (s)	8.13	7.62	7.62	7.43	7.43	6.71				8.26	7.06	
Final Degree of Utilization, x	0.210	0.388	0.388	0.200	0.200	0.721				0.676	0.101	
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3				2.3	2.3	
Service Time, ts (s)	5.83	5.32	5.32	5.13	5.13	4.41				5.96	4.76	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	93	184	184	97	97	387				294	51	
Capacity	443	473	473	485	485	537				436	510	
95% Queue Length, Q_{95} (veh)	0.8	1.8	1.8	0.7	0.7	5.9				4.9	0.3	
Control Delay (s/veh)	13.0	15.1	15.1	12.0	12.0	24.9				26.5	10.5	
Level of Service, LOS	B	C	C	B	B	C				D	B	
Approach Delay (s/veh)	14.7			20.6						24.1		
Approach LOS	B			C						C		
Intersection Delay, s/veh | LOS	19.5						C					

HCS7 All-Way Stop Control Report

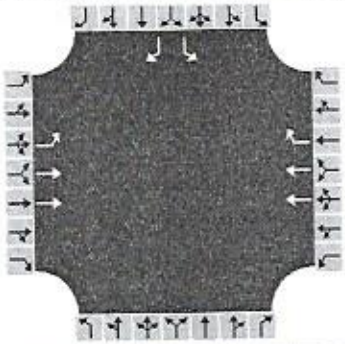
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Analysis Time Period (hrs)	0.25
Time Analyzed	Existing + M.S. + Project
Project Description	8:30-9:30 AM

Site Information

Intersection	Arrowcreek & Crossbow
Jurisdiction	Washoe County
East/West Street	Arrowcreek Parkway
North/South Street	Crossbow Court
Peak Hour Factor	0.70

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	47	252			134	202				184		37
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	T	T	T	R				L	R	
Flow Rate, v (veh/h)	67	180	180	96	96	289				263	53	
Percent Heavy Vehicles	2	2	2	2	2	2				2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20				3.20	3.20	
Initial Degree of Utilization, x	0.060	0.160	0.160	0.085	0.085	0.257				0.234	0.047	
Final Departure Headway, hd (s)	7.58	7.07	7.07	7.02	7.02	6.31				7.74	6.54	
Final Degree of Utilization, x	0.141	0.353	0.353	0.187	0.187	0.505				0.565	0.096	
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3				2.3	2.3	
Service Time, ts (s)	5.28	4.77	4.77	4.72	4.72	4.01				5.44	4.24	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	67	180	180	96	96	289				263	53	
Capacity	475	509	509	513	513	571				465	550	
95% Queue Length, Q_{95} (veh)	0.5	1.6	1.6	0.7	0.7	2.8				3.4	0.3	
Control Delay (s/veh)	11.5	13.6	13.6	11.3	11.3	15.3				20.1	9.9	
Level of Service, LOS	B	B	B	B	B	C				C	A	
Approach Delay (s/veh)	13.3			13.7						18.4		
Approach LOS	B			B						C		
Intersection Delay, s/veh | LOS	14.7						B					

HCS7 All-Way Stop Control Report

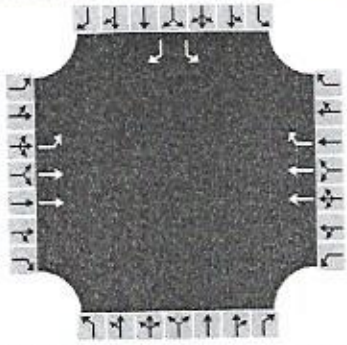
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Analysis Time Period (hrs)	0.25
Time Analyzed	Existing + M.S. + Project
Project Description	2:00-3:00 PM

Site Information

Intersection	Arrowcreek & Crossbow
Jurisdiction	Washoe County
East/West Street	Arrowcreek Parkway
North/South Street	Crossbow Court
Peak Hour Factor	0.75

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	34	184			185	53				60		27
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	T	T	T	R				L	R	
Flow Rate, v (veh/h)	45	123	123	123	123	71				80	36	
Percent Heavy Vehicles	2	2	2	2	2	2				2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20				3.20	3.20	
Initial Degree of Utilization, x	0.040	0.109	0.109	0.110	0.110	0.063				0.071	0.032	
Final Departure Headway, hd (s)	6.12	5.62	5.62	5.60	5.60	4.89				6.64	5.44	
Final Degree of Utilization, x	0.077	0.192	0.192	0.192	0.192	0.096				0.148	0.054	
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3				2.3	2.3	
Service Time, ts (s)	3.82	3.32	3.32	3.30	3.30	2.59				4.34	3.14	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	45	123	123	123	123	71				80	36	
Capacity	588	640	640	643	643	736				542	661	
95% Queue Length, Q_{95} (veh)	0.2	0.7	0.7	0.7	0.7	0.3				0.5	0.2	
Control Delay (s/veh)	9.3	9.6	9.6	9.6	9.6	8.1				10.5	8.5	
Level of Service, LOS	A	A	A	A	A	A				B	A	
Approach Delay (s/veh)	9.6			9.3						9.9		
Approach LOS	A			A						A		
Intersection Delay, s/veh | LOS	9.5						A					

HCS7 All-Way Stop Control Report

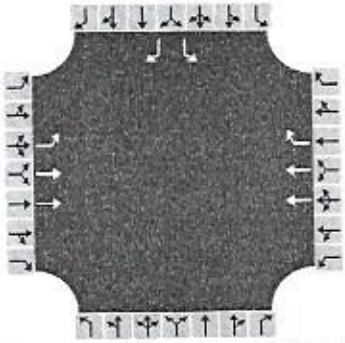
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Analysis Time Period (hrs)	0.25
Time Analyzed	Existing + M.S. + Project
Project Description	3:00-4:00 PM

Site Information

Intersection	Arrowcreek & Crossbow
Jurisdiction	Washoe County
East/West Street	Arrowcreek Parkway
North/South Street	Crossbow Court
Peak Hour Factor	0.75

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	44	220			188	197				272		72
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	T	T	T	R				L	R	
Flow Rate, v (veh/h)	59	147	147	125	125	263				363	96	
Percent Heavy Vehicles	2	2	2	2	2	2				2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20				3.20	3.20	
Initial Degree of Utilization, x	0.052	0.130	0.130	0.111	0.111	0.233				0.322	0.085	
Final Departure Headway, hd (s)	8.30	7.78	7.78	7.49	7.49	6.77				7.82	6.61	
Final Degree of Utilization, x	0.135	0.317	0.317	0.261	0.261	0.494				0.787	0.176	
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3				2.3	2.3	
Service Time, ts (s)	6.00	5.48	5.48	5.19	5.19	4.47				5.52	4.31	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	59	147	147	125	125	263				363	96	
Capacity	434	463	463	480	480	531				461	545	
95% Queue Length, Q_{95} (veh)	0.5	1.3	1.3	1.0	1.0	2.7				7.1	0.6	
Control Delay (s/veh)	12.3	14.0	14.0	12.8	12.8	15.9				33.8	10.7	
Level of Service, LOS	B	B	B	B	B	C				D	B	
Approach Delay (s/veh)	13.8			14.4						29.0		
Approach LOS	B			B						D		
Intersection Delay, s/veh | LOS	19.3						C					

HCS7 All-Way Stop Control Report

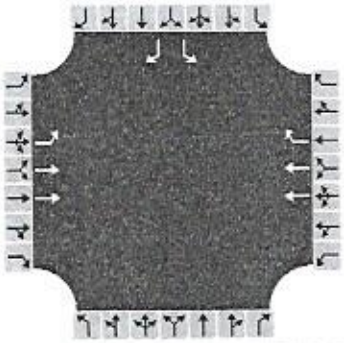
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Analysis Time Period (hrs)	0.25
Time Analyzed	Existing + M.S. + Project
Project Description	4:30-5:30 PM

Site Information

Intersection	Arrowcreek & Crossbow
Jurisdiction	Washoe County
East/West Street	Arrowcreek Parkway
North/South Street	Crossbow Court
Peak Hour Factor	0.90

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	29	152			232	93				144		32
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	T	T	T	T	R				L	R	
Flow Rate, v (veh/h)	32	84	84	129	129	103				160	36	
Percent Heavy Vehicles	2	2	2	2	2	2				2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20	3.20	3.20	3.20	3.20				3.20	3.20	
Initial Degree of Utilization, x	0.029	0.075	0.075	0.115	0.115	0.092				0.142	0.032	
Final Departure Headway, hd (s)	6.55	6.04	6.04	5.76	5.76	5.05				6.59	5.39	
Final Degree of Utilization, x	0.059	0.142	0.142	0.206	0.206	0.145				0.293	0.053	
Move-Up Time, m (s)	2.3	2.3	2.3	2.3	2.3	2.3				2.3	2.3	
Service Time, ts (s)	4.25	3.74	3.74	3.46	3.46	2.75				4.29	3.09	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	32	84	84	129	129	103				160	36	
Capacity	550	596	596	625	625	712				546	668	
95% Queue Length, Q_{95} (veh)	0.2	0.5	0.5	0.8	0.8	0.5				1.2	0.2	
Control Delay (s/veh)	9.7	9.7	9.7	10.0	10.0	8.6				12.0	8.4	
Level of Service, LOS	A	A	A	A	A	A				B	A	
Approach Delay (s/veh)	9.7			9.6						11.3		
Approach LOS	A			A						B		
Intersection Delay, s/veh | LOS	10.1						B					

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing
Intersection Orientation	North-South
Project Description	7:00-8:00 AM

Site Information

Intersection	Crossbow/South ES Dwy
Jurisdiction	Washoe County
East/West Street	South ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.50
Analysis Time Period (hrs)	0.25

Lanes

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		0		25						30	194				104	0
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1							
Critical Headway (sec)		6.42		6.22						4.12							
Base Follow-Up Headway (sec)		3.5		3.3						2.2							
Follow-Up Headway (sec)		3.52		3.32						2.22							

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			50							60							
Capacity, c (veh/h)			832							1363							
v/c Ratio			0.06							0.04							
95% Queue Length, Q_{95} (veh)			0.2							0.1							
Control Delay (s/veh)			9.6							7.8							
Level of Service (LOS)			A							A							
Approach Delay (s/veh)		9.6								1.4							
Approach LOS		A															

HCS7 Two-Way Stop-Control Report

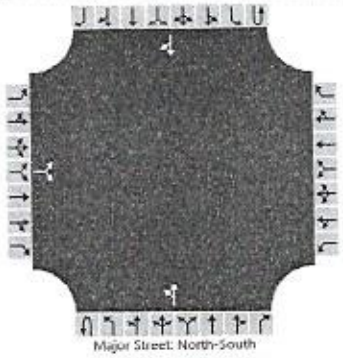
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing
Intersection Orientation	North-South
Project Description	7:30-8:30 AM

Site Information

Intersection	Crossbow/South ES Dwy
Jurisdiction	Washoe County
East/West Street	South ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.50
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		0		62						60	212				126	0
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1							
Critical Headway (sec)		6.42		6.22						4.12							
Base Follow-Up Headway (sec)		3.5		3.3						2.2							
Follow-Up Headway (sec)		3.52		3.32						2.22							

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			124							120							
Capacity, c (veh/h)			787							1313							
v/c Ratio			0.16							0.09							
95% Queue Length, Q_{95} (veh)			0.6							0.3							
Control Delay (s/veh)			10.4							8.0							
Level of Service (LOS)			B							A							
Approach Delay (s/veh)		10.4								2.5							
Approach LOS		B															

HCS7 Two-Way Stop-Control Report

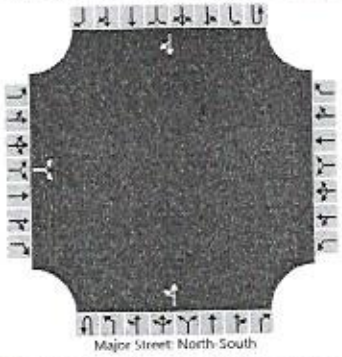
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing
Intersection Orientation	North-South
Project Description	8:30-9:30 AM

Site Information

Intersection	Crossbow/South ES Dwy
Jurisdiction	Washoe County
East/West Street	South ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.50
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		0		106						78	151				100	0
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			212							156						
Capacity, c (veh/h)			841							1372						
v/c Ratio			0.25							0.11						
95% Queue Length, Q_{95} (veh)			1.0							0.4						
Control Delay (s/veh)			10.7							8.0						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		10.7								3.4						
Approach LOS		B														

HCS7 Two-Way Stop-Control Report

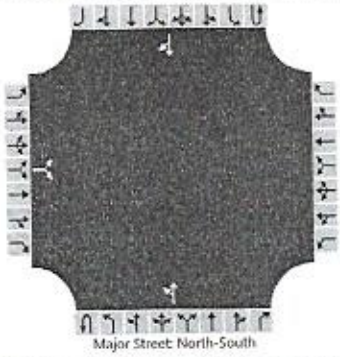
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing
Intersection Orientation	North-South
Project Description	2:00-3:00 PM

Site Information

Intersection	Crossbow/South ES Dwy
Jurisdiction	Washoe County
East/West Street	South ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.85
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		0		10						14	33				8	0
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1							
Critical Headway (sec)		6.42		6.22						4.12							
Base Follow-Up Headway (sec)		3.5		3.3						2.2							
Follow-Up Headway (sec)		3.52		3.32						2.22							

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			12							16							
Capacity, c (veh/h)			1072							1610							
v/c Ratio			0.01							0.01							
95% Queue Length, Q_{95} (veh)			0.0							0.0							
Control Delay (s/veh)			8.4							7.3							
Level of Service (LOS)			A							A							
Approach Delay (s/veh)	8.4								2.2								
Approach LOS	A																

HCS7 Two-Way Stop-Control Report

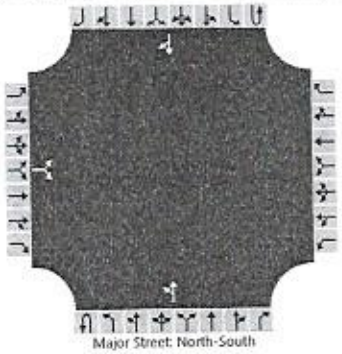
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing
Intersection Orientation	North-South
Project Description	4:30-5:30 PM

Site Information

Intersection	Crossbow/South ES Dwy
Jurisdiction	Washoe County
East/West Street	South ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.50
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		0		40						32	48				74	0
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1							
Critical Headway (sec)		6.42		6.22						4.12							
Base Follow-Up Headway (sec)		3.5		3.3						2.2							
Follow-Up Headway (sec)		3.52		3.32						2.22							

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			80							64							
Capacity, c (veh/h)			899							1434							
v/c Ratio			0.09							0.04							
95% Queue Length, Q_{95} (veh)			0.3							0.1							
Control Delay (s/veh)			9.4							7.6							
Level of Service (LOS)			A							A							
Approach Delay (s/veh)	9.4								3.3								
Approach LOS	A																

HCS7 Two-Way Stop-Control Report

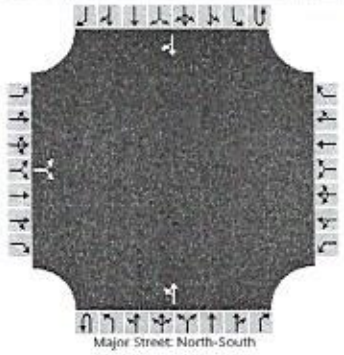
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S.
Intersection Orientation	North-South
Project Description	7:00-8:00 AM

Site Information

Intersection	Crossbow/South ES Dwy
Jurisdiction	Washoe County
East/West Street	South ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.50
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		0		25						30	266				203	0
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			50							60						
Capacity, c (veh/h)			645							1153						
v/c Ratio			0.08							0.05						
95% Queue Length, Q_{95} (veh)			0.3							0.2						
Control Delay (s/veh)			11.1							8.3						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		11.1								1.4						
Approach LOS		B														

HCS7 Two-Way Stop-Control Report

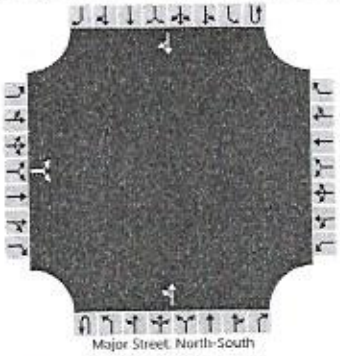
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S.
Intersection Orientation	North-South
Project Description	7:30-8:30 AM

Site Information

Intersection	Crossbow/South ES Dwy
Jurisdiction	Washoe County
East/West Street	South ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.50
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		0		62						60	236				159	0
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1							
Critical Headway (sec)		6.42		6.22						4.12							
Base Follow-Up Headway (sec)		3.5		3.3						2.2							
Follow-Up Headway (sec)		3.52		3.32						2.22							

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			124							120							
Capacity, c (veh/h)			723							1242							
v/c Ratio			0.17							0.10							
95% Queue Length, Q_{95} (veh)			0.6							0.3							
Control Delay (s/veh)			11.0							8.2							
Level of Service (LOS)			B							A							
Approach Delay (s/veh)	11.0								2.5								
Approach LOS	B																

HCS7 Two-Way Stop-Control Report

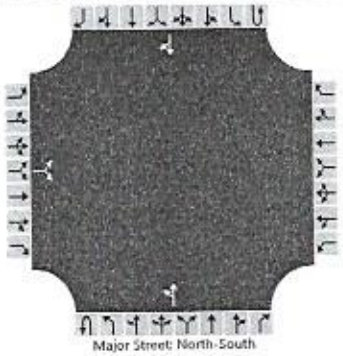
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S.
Intersection Orientation	North-South
Project Description	8:30-9:30 AM

Site Information

Intersection	Crossbow/South ES Dwy
Jurisdiction	Washoe County
East/West Street	South ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.50
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		0		106						78	157				107	0
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1							
Critical Headway (sec)		6.42		6.22						4.12							
Base Follow-Up Headway (sec)		3.5		3.3						2.2							
Follow-Up Headway (sec)		3.52		3.32						2.22							

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			212							156							
Capacity, c (veh/h)			826							1356							
v/c Ratio			0.26							0.12							
95% Queue Length, Q_{95} (veh)			1.0							0.4							
Control Delay (s/veh)			10.9							8.0							
Level of Service (LOS)			B							A							
Approach Delay (s/veh)		10.9								3.4							
Approach LOS		B															

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S.
Intersection Orientation	North-South
Project Description	2:00-3:00 PM

Site Information

Intersection	Crossbow/South ES Dwy
Jurisdiction	Washoe County
East/West Street	South ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.85
Analysis Time Period (hrs)	0.25

Lanes

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		0		10						14	67				71	0
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1							
Critical Headway (sec)		6.42		6.22						4.12							
Base Follow-Up Headway (sec)		3.5		3.3						2.2							
Follow-Up Headway (sec)		3.52		3.32						2.22							

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			12							16							
Capacity, c (veh/h)			976							1513							
v/c Ratio			0.01							0.01							
95% Queue Length, Q_{95} (veh)			0.0							0.0							
Control Delay (s/veh)			8.7							7.4							
Level of Service (LOS)			A							A							
Approach Delay (s/veh)	8.7								1.3								
Approach LOS	A																

HCS7 Two-Way Stop-Control Report

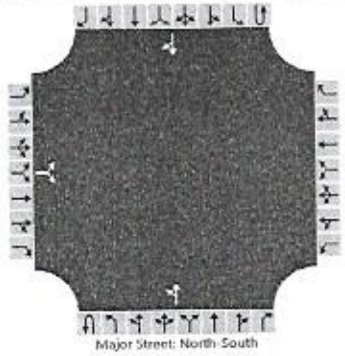
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S.
Intersection Orientation	North-South
Project Description	3:00-4:00 PM

Site Information

Intersection	Crossbow/South ES Dwy
Jurisdiction	Washoe County
East/West Street	South ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.50
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		0		106						65	166				226	1
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1							
Critical Headway (sec)		6.42		6.22						4.12							
Base Follow-Up Headway (sec)		3.5		3.3						2.2							
Follow-Up Headway (sec)		3.52		3.32						2.22							

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			212							130							
Capacity, c (veh/h)			607							1107							
v/c Ratio			0.35							0.12							
95% Queue Length, Q_{95} (veh)			1.6							0.4							
Control Delay (s/veh)			14.1							8.7							
Level of Service (LOS)			B							A							
Approach Delay (s/veh)		14.1								3.3							
Approach LOS		B															

HCS7 Two-Way Stop-Control Report

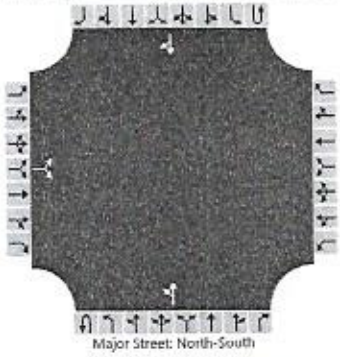
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S.
Intersection Orientation	North-South
Project Description	4:30-5:30 PM

Site Information

Intersection	Crossbow/South ES Dwy
Jurisdiction	Washoe County
East/West Street	South ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.50
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		0		40						32	66				108	0
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1							
Critical Headway (sec)		6.42		6.22						4.12							
Base Follow-Up Headway (sec)		3.5		3.3						2.2							
Follow-Up Headway (sec)		3.52		3.32						2.22							

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			80							64							
Capacity, c (veh/h)			824							1354							
v/c Ratio			0.10							0.05							
95% Queue Length, Q_{95} (veh)			0.3							0.1							
Control Delay (s/veh)			9.8							7.8							
Level of Service (LOS)			A							A							
Approach Delay (s/veh)		9.8								2.8							
Approach LOS		A															

HCS7 Two-Way Stop-Control Report

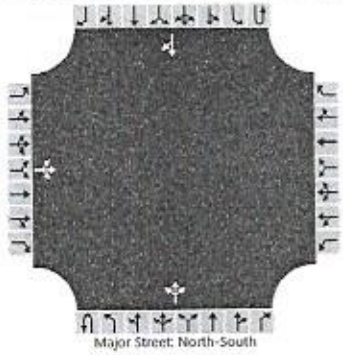
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S. + Project
Intersection Orientation	North-South
Project Description	7:00-8:00 AM

Site Information

Intersection	Crossbow/South ES Dwy
Jurisdiction	Washoe County
East/West Street	South ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.50
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LTR								LTR					TR
Volume (veh/h)		0	0	25						30	270	36			224	0
Percent Heavy Vehicles (%)		2	2	2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2						4.1							
Critical Headway (sec)		7.12	6.52	6.22						4.12							
Base Follow-Up Headway (sec)		3.5	4.0	3.3						2.2							
Follow-Up Headway (sec)		3.52	4.02	3.32						2.22							

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			50							60							
Capacity, c (veh/h)			611							1112							
v/c Ratio			0.08							0.05							
95% Queue Length, Q_{95} (veh)			0.3							0.2							
Control Delay (s/veh)			11.4							8.4							
Level of Service (LOS)			B							A							
Approach Delay (s/veh)		11.4								1.4							
Approach LOS		B															

HCS7 Two-Way Stop-Control Report

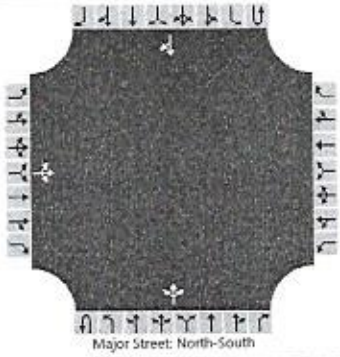
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S. + Project
Intersection Orientation	North-South
Project Description	7:30-8:30 AM

Site Information

Intersection	Crossbow/South ES Dwy
Jurisdiction	Washoe County
East/West Street	South ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.50
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LTR								LTR					TR
Volume (veh/h)		0	0	62						60	240	36			180	0
Percent Heavy Vehicles (%)		2	3	2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2						4.1						
Critical Headway (sec)		7.12	6.53	6.22						4.12						
Base Follow-Up Headway (sec)		3.5	4.0	3.3						2.2						
Follow-Up Headway (sec)		3.52	4.03	3.32						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			124							120						
Capacity, c (veh/h)			684							1199						
v/c Ratio			0.18							0.10						
95% Queue Length, Q_{95} (veh)			0.7							0.3						
Control Delay (s/veh)			11.4							8.3						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		11.4								2.5						
Approach LOS		B														

HCS7 Two-Way Stop-Control Report

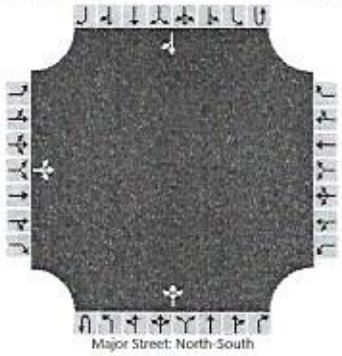
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S. + Project
Intersection Orientation	North-South
Project Description	8:30-9:30 AM

Site Information

Intersection	Crossbow/South ES Dwy
Jurisdiction	Washoe County
East/West Street	South ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.50
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LTR								LTR					TR
Volume (veh/h)		0	0	106						78	158	13			115	0
Percent Heavy Vehicles (%)		2	3	2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2						4.1						
Critical Headway (sec)		7.12	6.53	6.22						4.12						
Base Follow-Up Headway (sec)		3.5	4.0	3.3						2.2						
Follow-Up Headway (sec)		3.52	4.03	3.32						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			212							156						
Capacity, c (veh/h)			809							1338						
v/c Ratio			0.26							0.12						
95% Queue Length, Q_{95} (veh)			1.1							0.4						
Control Delay (s/veh)			11.0							8.0						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		11.0								3.3						
Approach LOS		B														

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S. + Project
Intersection Orientation	North-South
Project Description	2:00-3:00 PM

Site Information

Intersection	Crossbow/South ES Dwy
Jurisdiction	Washoe County
East/West Street	South ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.85
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LTR								LTR					TR
Volume (veh/h)		0	0	10						14	67	6			77	0
Percent Heavy Vehicles (%)		2	3	2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2						4.1							
Critical Headway (sec)		7.12	6.53	6.22						4.12							
Base Follow-Up Headway (sec)		3.5	4.0	3.3						2.2							
Follow-Up Headway (sec)		3.52	4.03	3.32						2.22							

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			12							16							
Capacity, c (veh/h)			967							1504							
v/c Ratio			0.01							0.01							
95% Queue Length, Q_{95} (veh)			0.0							0.0							
Control Delay (s/veh)			8.8							7.4							
Level of Service (LOS)			A							A							
Approach Delay (s/veh)		8.8								1.3							
Approach LOS		A															

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S. + Project
Intersection Orientation	North-South
Project Description	3:00-4:00 PM

Site Information

Intersection	Crossbow/South ES Dwy
Jurisdiction	Washoe County
East/West Street	South ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.50
Analysis Time Period (hrs)	0.25

Lanes

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LTR								LTR					TR
Volume (veh/h)		0	0	106						65	167	9			238	1
Percent Heavy Vehicles (%)		2	3	2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2						4.1							
Critical Headway (sec)		7.12	6.53	6.22						4.12							
Base Follow-Up Headway (sec)		3.5	4.0	3.3						2.2							
Follow-Up Headway (sec)		3.52	4.03	3.32						2.22							

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			212							130							
Capacity, c (veh/h)			588							1084							
v/c Ratio			0.36							0.12							
95% Queue Length, Q_{95} (veh)			1.6							0.4							
Control Delay (s/veh)			14.5							8.8							
Level of Service (LOS)			B							A							
Approach Delay (s/veh)		14.5								3.3							
Approach LOS		B															

HCS7 Two-Way Stop-Control Report

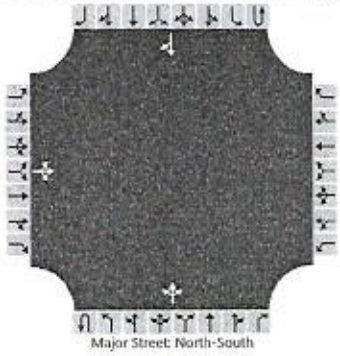
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S. + Project
Intersection Orientation	North-South
Project Description	4:30-5:30 PM

Site Information

Intersection	Crossbow/South ES Dwy
Jurisdiction	Washoe County
East/West Street	South ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.50
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LTR								LTR					TR
Volume (veh/h)		0	0	40						32	68	22			136	0
Percent Heavy Vehicles (%)		2	3	2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2						4.1						
Critical Headway (sec)		7.12	6.53	6.22						4.12						
Base Follow-Up Headway (sec)		3.5	4.0	3.3						2.2						
Follow-Up Headway (sec)		3.52	4.03	3.32						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			80							64						
Capacity, c (veh/h)			767							1291						
v/c Ratio			0.10							0.05						
95% Queue Length, Q_{95} (veh)			0.3							0.2						
Control Delay (s/veh)			10.2							7.9						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		10.2								2.4						
Approach LOS		B														

HCS7 Two-Way Stop-Control Report

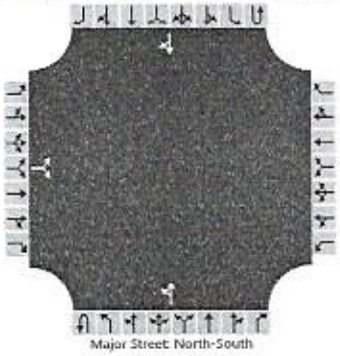
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing
Intersection Orientation	North-South
Project Description	7:00-8:00 AM

Site Information

Intersection	Crossbow/North ES Dwy
Jurisdiction	Washoe County
East/West Street	North ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.50
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		0		0						4	190				104	0
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			0							8						
Capacity, c (veh/h)										1363						
v/c Ratio										0.01						
95% Queue Length, Q_{95} (veh)										0.0						
Control Delay (s/veh)										7.7						
Level of Service (LOS)										A						
Approach Delay (s/veh)										0.2						
Approach LOS																

HCS7 Two-Way Stop-Control Report

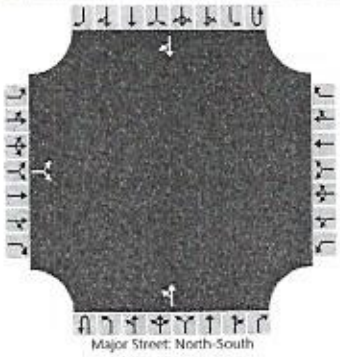
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing
Intersection Orientation	North-South
Project Description	7:30-8:30 AM

Site Information

Intersection	Crossbow/North ES Dwy
Jurisdiction	Washoe County
East/West Street	North ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.50
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		0		1						32	180				125	1
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			2							64						
Capacity, c (veh/h)			788							1313						
v/c Ratio			0.00							0.05						
95% Queue Length, Q_{95} (veh)			0.0							0.2						
Control Delay (s/veh)			9.6							7.9						
Level of Service (LOS)			A							A						
Approach Delay (s/veh)		9.6								1.6						
Approach LOS		A														

HCS7 Two-Way Stop-Control Report

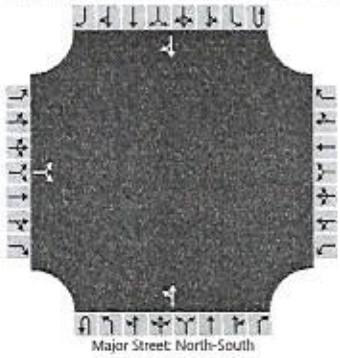
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing
Intersection Orientation	North-South
Project Description	8:30-9:30 AM

Site Information

Intersection	Crossbow/North ES Dwy
Jurisdiction	Washoe County
East/West Street	North ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.50
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		0		74						139	12				26	1
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			148							278						
Capacity, c (veh/h)			1014							1551						
v/c Ratio			0.15							0.18						
95% Queue Length, Q_{95} (veh)			0.5							0.7						
Control Delay (s/veh)			9.2							7.8						
Level of Service (LOS)			A							A						
Approach Delay (s/veh)		9.2								7.3						
Approach LOS		A														

HCS7 Two-Way Stop-Control Report

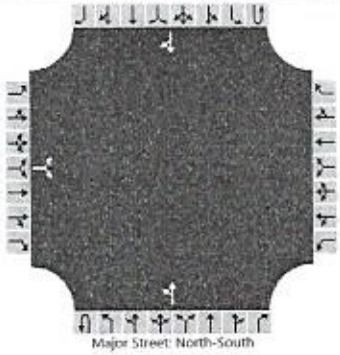
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing
Intersection Orientation	North-South
Project Description	2:00-3:00 PM

Site Information

Intersection	Crossbow/North ES Dwy
Jurisdiction	Washoe County
East/West Street	North ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.85
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		0		0						4	29				8	0
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			0							5						
Capacity, c (veh/h)										1610						
v/c Ratio										0.00						
95% Queue Length, Q_{95} (veh)										0.0						
Control Delay (s/veh)										7.2						
Level of Service (LOS)										A						
Approach Delay (s/veh)									0.9							
Approach LOS																

HCS7 Two-Way Stop-Control Report

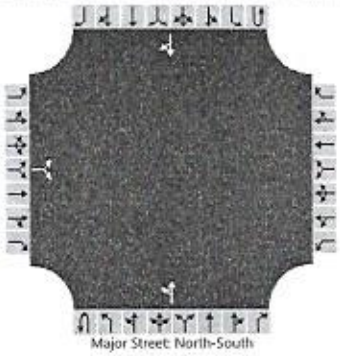
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing
Intersection Orientation	North-South
Project Description	3:00-4:00 PM

Site Information

Intersection	Crossbow/North ES Dwy
Jurisdiction	Washoe County
East/West Street	North ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.50
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		0		55						56	91				135	1
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			110							112						
Capacity, c (veh/h)			768							1291						
v/c Ratio			0.14							0.09						
95% Queue Length, Q_{95} (veh)			0.5							0.3						
Control Delay (s/veh)			10.5							8.1						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		10.5								3.5						
Approach LOS		B														

HCS7 Two-Way Stop-Control Report

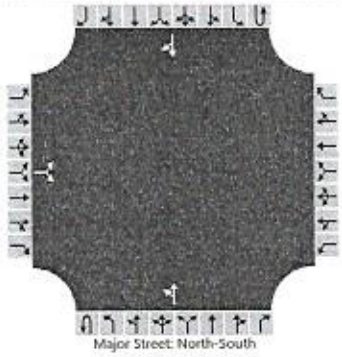
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing
Intersection Orientation	North-South
Project Description	4:30-5:30 PM

Site Information

Intersection	Crossbow/North ES Dwy
Jurisdiction	Washoe County
East/West Street	North ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		1		2						3	45				72	0
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			3							3						
Capacity, c (veh/h)			934							1518						
v/c Ratio			0.00							0.00						
95% Queue Length, Q_{95} (veh)			0.0							0.0						
Control Delay (s/veh)			8.9							7.4						
Level of Service (LOS)			A							A						
Approach Delay (s/veh)		8.9								0.5						
Approach LOS		A														

HCS7 Two-Way Stop-Control Report

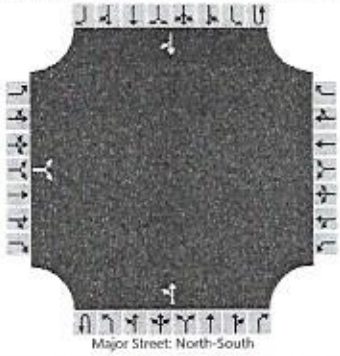
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S.
Intersection Orientation	North-South
Project Description	7:00-8:00 AM

Site Information

Intersection	Crossbow/North ES Dwy
Jurisdiction	Washoe County
East/West Street	North ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.50
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		0		0						4	262				203	0
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			0							8						
Capacity, c (veh/h)										1153						
v/c Ratio										0.01						
95% Queue Length, Q_{95} (veh)										0.0						
Control Delay (s/veh)										8.1						
Level of Service (LOS)										A						
Approach Delay (s/veh)									0.2							
Approach LOS																

HCS7 Two-Way Stop-Control Report

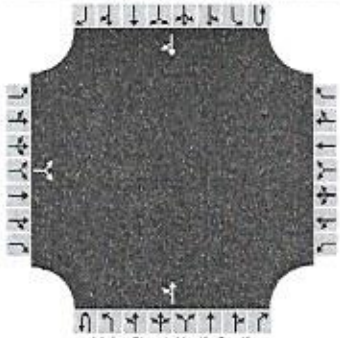
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S.
Intersection Orientation	North-South
Project Description	7:30-8:30 AM

Site Information

Intersection	Crossbow/North ES Dwy
Jurisdiction	Washoe County
East/West Street	North ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.50
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		0		1						32	204				158	1
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			2							64						
Capacity, c (veh/h)			724							1242						
v/c Ratio			0.00							0.05						
95% Queue Length, Q_{95} (veh)			0.0							0.2						
Control Delay (s/veh)			10.0							8.1						
Level of Service (LOS)			A							A						
Approach Delay (s/veh)		10.0								1.6						
Approach LOS		A														

HCS7 Two-Way Stop-Control Report

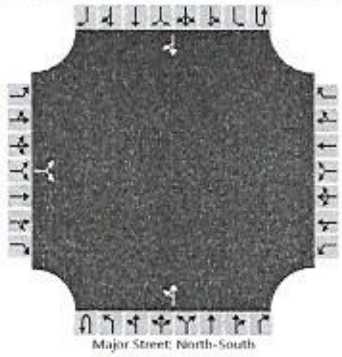
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S.
Intersection Orientation	North-South
Project Description	8:30-9:30 AM

Site Information

Intersection	Crossbow/North ES Dwy
Jurisdiction	Washoe County
East/West Street	North ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.50
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		0		74						139	18				33	1
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			148							278						
Capacity, c (veh/h)			997							1533						
v/c Ratio			0.15							0.18						
95% Queue Length, Q_{95} (veh)			0.5							0.7						
Control Delay (s/veh)			9.2							7.9						
Level of Service (LOS)			A							A						
Approach Delay (s/veh)		9.2								7.1						
Approach LOS		A														

HCS7 Two-Way Stop-Control Report

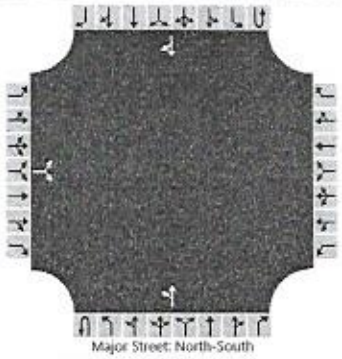
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S.
Intersection Orientation	North-South
Project Description	2:00-3:00 PM

Site Information

Intersection	Crossbow/North ES Dwy
Jurisdiction	Washoe County
East/West Street	North ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.85
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		0		0						4	63				71	0
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			0							5						
Capacity, c (veh/h)										1513						
v/c Ratio										0.00						
95% Queue Length, Q_{95} (veh)										0.0						
Control Delay (s/veh)										7.4						
Level of Service (LOS)										A						
Approach Delay (s/veh)										0.5						
Approach LOS																

HCS7 Two-Way Stop-Control Report

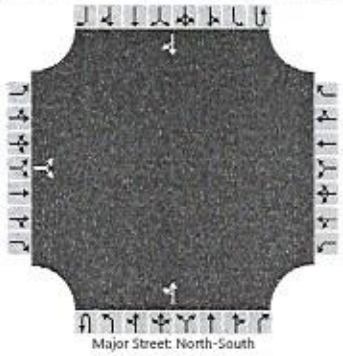
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S.
Intersection Orientation	North-South
Project Description	3:00-4:00 PM

Site Information

Intersection	Crossbow/North ES Dwy
Jurisdiction	Washoe County
East/West Street	North ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.50
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		0		55						56	110				172	1
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			110							112						
Capacity, c (veh/h)			698							1213						
v/c Ratio			0.16							0.09						
95% Queue Length, Q_{95} (veh)			0.6							0.3						
Control Delay (s/veh)			11.1							8.3						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		11.1								3.4						
Approach LOS		B														

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S.
Intersection Orientation	North-South
Project Description	4:30-5:30 PM

Site Information

Intersection	Crossbow/North ES Dwy
Jurisdiction	Washoe County
East/West Street	North ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		1		2						3	63				106	0
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			3							3						
Capacity, c (veh/h)			882							1470						
v/c Ratio			0.00							0.00						
95% Queue Length, Q_{95} (veh)			0.0							0.0						
Control Delay (s/veh)			9.1							7.5						
Level of Service (LOS)			A							A						
Approach Delay (s/veh)		9.1								0.4						
Approach LOS		A														

HCS7 Two-Way Stop-Control Report

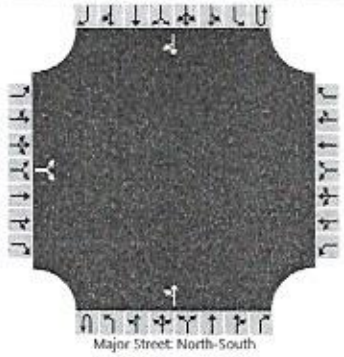
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S. + Project
Intersection Orientation	North-South
Project Description	7:00-8:00 AM

Site Information

Intersection	Crossbow/North ES Dwy
Jurisdiction	Washoe County
East/West Street	North ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.50
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		0		0						4	266				224	0
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			0							8						
Capacity, c (veh/h)										1112						
v/c Ratio										0.01						
95% Queue Length, Q_{95} (veh)										0.0						
Control Delay (s/veh)										8.3						
Level of Service (LOS)										A						
Approach Delay (s/veh)									0.2							
Approach LOS																

HCS7 Two-Way Stop-Control Report

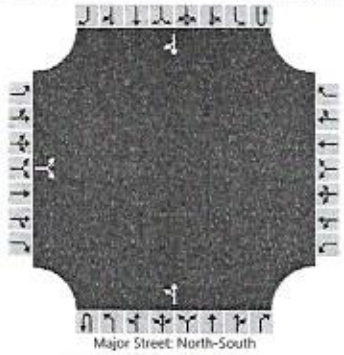
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S. + Project
Intersection Orientation	North-South
Project Description	7:30-8:30 AM

Site Information

Intersection	Crossbow/North ES Dwy
Jurisdiction	Washoe County
East/West Street	North ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.50
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		0		1						32	208				179	1
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			2							64						
Capacity, c (veh/h)			685							1199						
v/c Ratio			0.00							0.05						
95% Queue Length, Q_{95} (veh)			0.0							0.2						
Control Delay (s/veh)			10.3							8.2						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		10.3								1.6						
Approach LOS		B														

HCS7 Two-Way Stop-Control Report

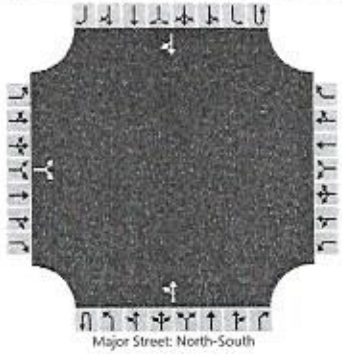
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S. + Project
Intersection Orientation	North-South
Project Description	8:30-9:30 AM

Site Information

Intersection	Crossbow/North ES Dwy
Jurisdiction	Washoe County
East/West Street	North ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.50
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		0		74						139	19				41	1
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			148							278						
Capacity, c (veh/h)			976							1513						
v/c Ratio			0.15							0.18						
95% Queue Length, Q_{95} (veh)			0.5							0.7						
Control Delay (s/veh)			9.3							7.9						
Level of Service (LOS)			A							A						
Approach Delay (s/veh)		9.3								7.1						
Approach LOS		A														

HCS7 Two-Way Stop-Control Report

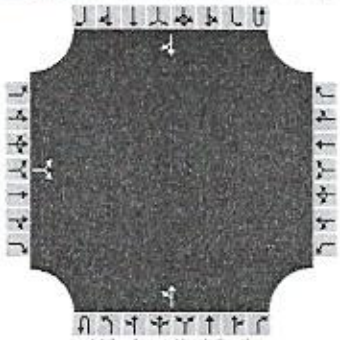
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S. + Project
Intersection Orientation	North-South
Project Description	2:00-3:00 PM

Site Information

Intersection	Crossbow/North ES Dwy
Jurisdiction	Washoe County
East/West Street	North ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.85
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		0		0						4	63				77	0
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			0							5						
Capacity, c (veh/h)										1504						
v/c Ratio										0.00						
95% Queue Length, Q_{95} (veh)										0.0						
Control Delay (s/veh)										7.4						
Level of Service (LOS)										A						
Approach Delay (s/veh)										0.5						
Approach LOS																

HCS7 Two-Way Stop-Control Report

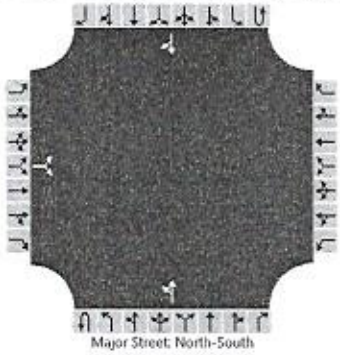
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S. + Project
Intersection Orientation	North-South
Project Description	3:00-4:00 PM

Site Information

Intersection	Crossbow/North ES Dwy
Jurisdiction	Washoe County
East/West Street	North ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.50
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		0		55						56	111				184	1
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			110							112						
Capacity, c (veh/h)			677							1189						
v/c Ratio			0.16							0.09						
95% Queue Length, Q_{95} (veh)			0.6							0.3						
Control Delay (s/veh)			11.4							8.3						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		11.4								3.4						
Approach LOS		B														

HCS7 Two-Way Stop-Control Report

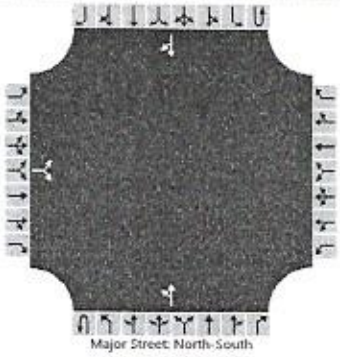
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S. + Project
Intersection Orientation	North-South
Project Description	4:30-5:30 PM

Site Information

Intersection	Crossbow/North ES Dwy
Jurisdiction	Washoe County
East/West Street	North ES Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		1		2						3	65				134	0
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			3							3						
Capacity, c (veh/h)			846							1433						
v/c Ratio			0.00							0.00						
95% Queue Length, Q_{95} (veh)			0.0							0.0						
Control Delay (s/veh)			9.3							7.5						
Level of Service (LOS)			A							A						
Approach Delay (s/veh)		9.3								0.3						
Approach LOS		A														

HCS7 Two-Way Stop-Control Report

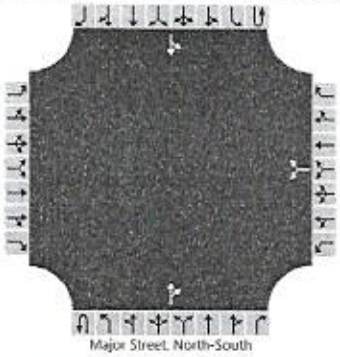
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S. + Project
Intersection Orientation	North-South
Project Description	7:00-8:00 AM

Site Information

Intersection	Crossbow/North Dwy
Jurisdiction	Washoe County
East/West Street	North Project Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.75
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						21		0			262	4		0	203	
Percent Heavy Vehicles (%)						2		2						2		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.42		6.22						4.12		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.52		3.32						2.22		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							28							0		
Capacity, c (veh/h)							450							1204		
v/c Ratio							0.06							0.00		
95% Queue Length, Q_{95} (veh)							0.2							0.0		
Control Delay (s/veh)							13.5							8.0		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)						13.5							0.0			
Approach LOS						B										

HCS7 Two-Way Stop-Control Report

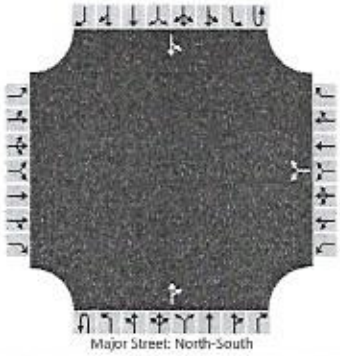
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S. + Project
Intersection Orientation	North-South
Project Description	7:30-8:30 AM

Site Information

Intersection	Crossbow/North Dwy
Jurisdiction	Washoe County
East/West Street	North Project Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.75
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						21		0			204	4		0	159	
Percent Heavy Vehicles (%)						2		2						2		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.42		6.22						4.12		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.52		3.32						2.22		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							28							0		
Capacity, c (veh/h)							540							1286		
v/c Ratio							0.05							0.00		
95% Queue Length, Q_{95} (veh)							0.2							0.0		
Control Delay (s/veh)							12.0							7.8		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)					12.0								0.0			
Approach LOS					B											

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S. + Project
Intersection Orientation	North-South
Project Description	8:30-9:30 AM

Site Information

Intersection	Crossbow/North Dwy
Jurisdiction	Washoe County
East/West Street	North Project Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.75
Analysis Time Period (hrs)	0.25

Lanes

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						8		0			18	1		0	34	
Percent Heavy Vehicles (%)						2		2						2		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.42		6.22						4.12		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.52		3.32						2.22		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							11							0		
Capacity, c (veh/h)							934							1589		
v/c Ratio							0.01							0.00		
95% Queue Length, Q_{95} (veh)							0.0							0.0		
Control Delay (s/veh)							8.9							7.3		
Level of Service (LOS)							A							A		
Approach Delay (s/veh)						8.9							0.0			
Approach LOS						A										

HCS7 Two-Way Stop-Control Report

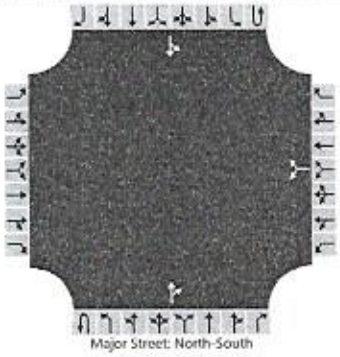
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S. + Project
Intersection Orientation	North-South
Project Description	2:00-3:00 PM

Site Information

Intersection	Crossbow/North Dwy
Jurisdiction	Washoe County
East/West Street	North Project Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.75
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						6		0			63	0		0	71	
Percent Heavy Vehicles (%)						2		2						2		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.42		6.22						4.12		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.52		3.32						2.22		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							8							0		
Capacity, c (veh/h)							811							1513		
v/c Ratio							0.01							0.00		
95% Queue Length, Q_{95} (veh)							0.0							0.0		
Control Delay (s/veh)							9.5							7.4		
Level of Service (LOS)							A							A		
Approach Delay (s/veh)					9.5								0.0			
Approach LOS					A											

HCS7 Two-Way Stop-Control Report

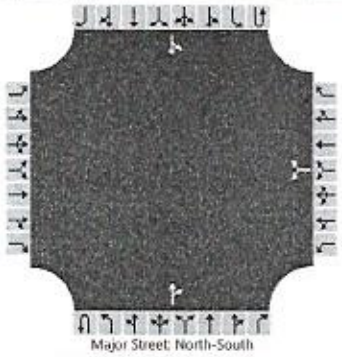
General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S. + Project
Intersection Orientation	North-South
Project Description	3:00-4:00 PM

Site Information

Intersection	Crossbow/North Dwy
Jurisdiction	Washoe County
East/West Street	North Project Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.75
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						12		0			110	1		0	173	
Percent Heavy Vehicles (%)						2		2						2		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.42		6.22						4.12		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.52		3.32						2.22		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							16							0		
Capacity, c (veh/h)							624							1434		
v/c Ratio							0.03							0.00		
95% Queue Length, Q_{95} (veh)							0.1							0.0		
Control Delay (s/veh)							10.9							7.5		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)					10.9								0.0			
Approach LOS					B											

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	3/5/2020
Analysis Year	2020
Time Analyzed	Existing + M.S. + Project
Intersection Orientation	North-South
Project Description	4:30-5:30 PM

Site Information

Intersection	Crossbow/North Dwy
Jurisdiction	Washoe County
East/West Street	North Project Driveway
North/South Street	Crossbow Court
Peak Hour Factor	0.75
Analysis Time Period (hrs)	0.25

Lanes

Vehicle Volumes and Adjustments

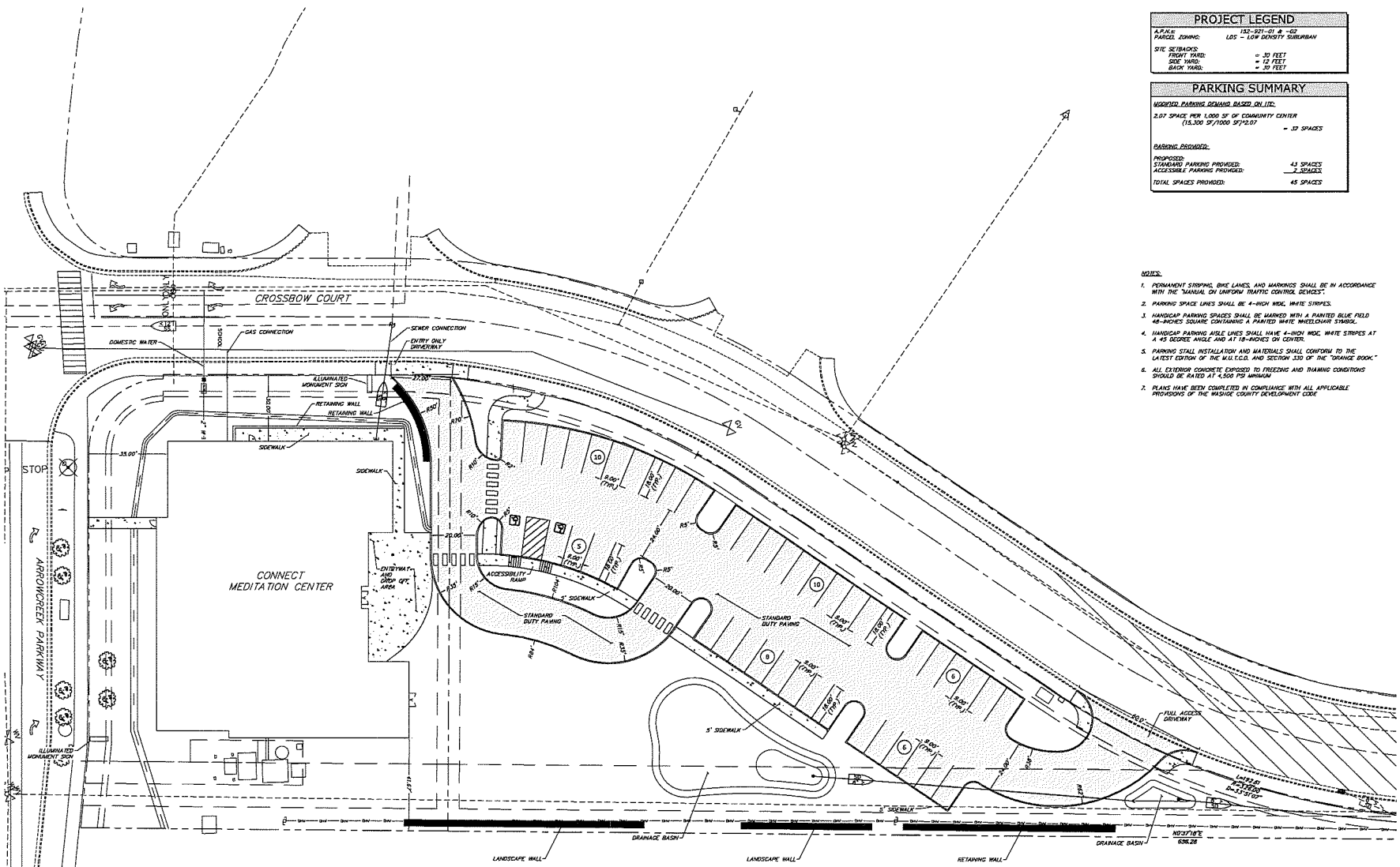
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						28		0			64	2		0	106	
Percent Heavy Vehicles (%)						2		2						2		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.42		6.22						4.12		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.52		3.32						2.22		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							37							0		
Capacity, c (veh/h)							760							1508		
v/c Ratio							0.05							0.00		
95% Queue Length, Q_{95} (veh)							0.2							0.0		
Control Delay (s/veh)							10.0							7.4		
Level of Service (LOS)							A							A		
Approach Delay (s/veh)					10.0								0.0			
Approach LOS					A											



2 DAYS BEFORE YOU DIG CALL USA TOLL FREE 1-800-227-2600

SITE PLAN

SCALE: 1" = 20'-0"

PROJECT LEGEND

A.P.N.S:	152-321-01 & -02
PARCEL ZONING:	LDS - LOW DENSITY SUBURBAN
SITE SETBACKS:	
FRONT YARD:	= 30 FEET
SIDE YARD:	= 12 FEET
BACK YARD:	= 30 FEET

PARKING SUMMARY

MODIFIED PARKING DEMAND BASED ON ITE:

2.07 SPACE PER 1,000 SF OF COMMUNITY CENTER
(15,300 SF/1000 SF)*2.07 = 33 SPACES

PARKING PROVIDED:

PROPOSED:
STANDARD PARKING PROVIDED: 43 SPACES
ACCESSIBLE PARKING PROVIDED: 2 SPACES

TOTAL SPACES PROVIDED: 45 SPACES

NOTES:

1. PERMANENT STRIPING, BIKE LANES, AND MARKINGS SHALL BE IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
2. PARKING SPACE LINES SHALL BE 4-INCH WIDE, WHITE STRIPES.
3. HANDICAP PARKING SPACES SHALL BE MARKED WITH A PAINTED BLUE FIELD 48-INCHES SQUARE CONTAINING A PAINTED WHITE WHEELCHAIR SYMBOL.
4. HANDICAP PARKING AISLE LINES SHALL HAVE 4-INCH WIDE, WHITE STRIPES AT A 45 DEGREE ANGLE AND AT 18-INCHES ON CENTER.
5. PARKING STALL INSTALLATION AND MATERIALS SHALL CONFORM TO THE LATEST EDITION OF THE W.S.I.C.C. AND SECTION 330 OF THE "ORANGE BOOK."
6. ALL EXTERIOR CONCRETE EXPOSED TO FREEZING AND THAWING CONDITIONS SHOULD BE RATED AT 4,500 PSI MINIMUM
7. PLANS HAVE BEEN COMPLETED IN COMPLIANCE WITH ALL APPLICABLE PROVISIONS OF THE WASHOE COUNTY DEVELOPMENT CODE

DRAWN:
DESIGNED:
CHECKED/STAMPED:

TECTONICS DESIGN GROUP
10451 Double R Boulevard, Reno, NV 89521
www.tectonicsdesigngroup.com
tel 775-824-9988
fax 775-824-9986

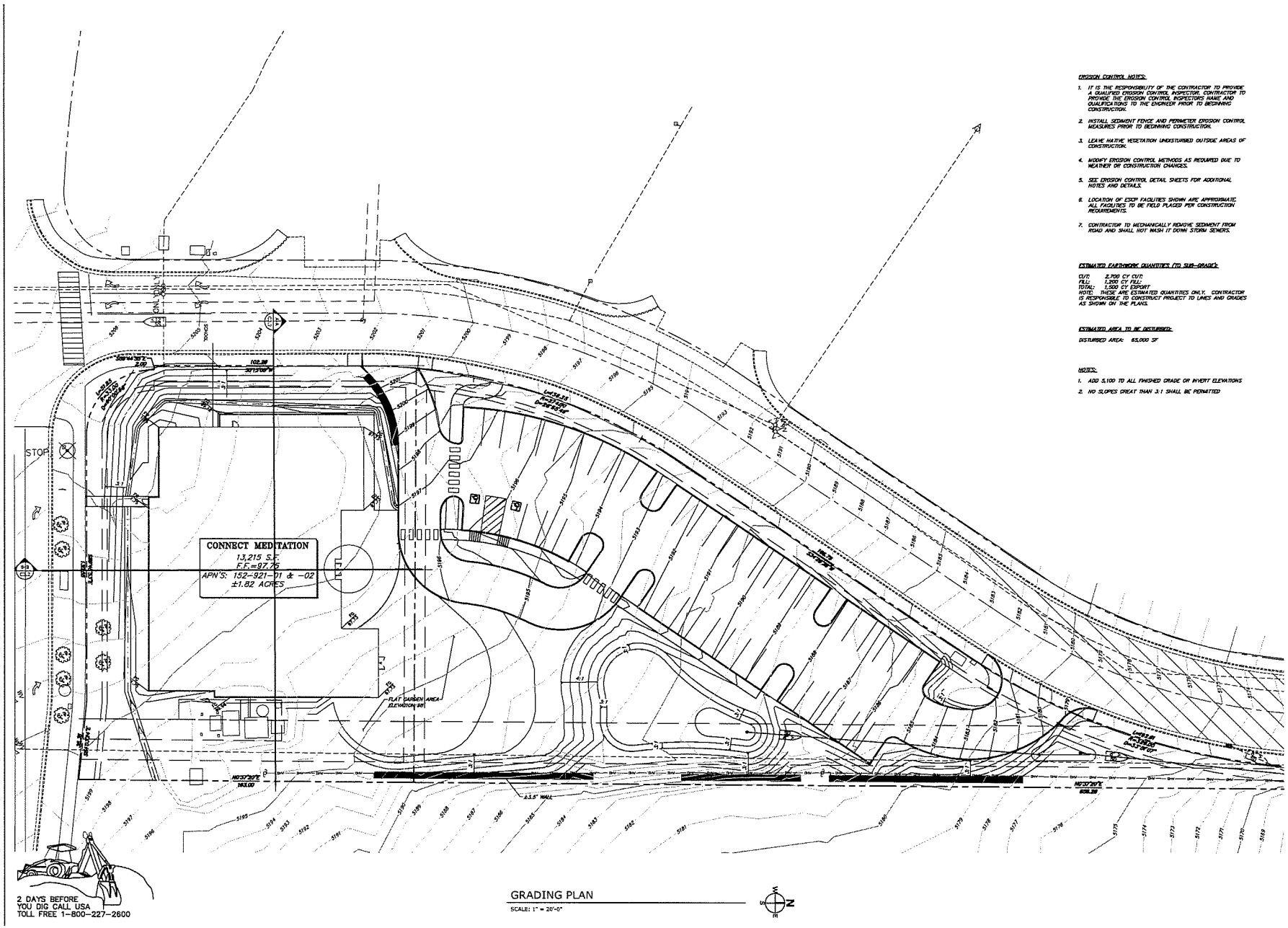
Connect Meditation
Reno, NV

Sage property Ventures LLC
175 Knightsbridge Ct
Reno, NV

DATE: 05/12/20
SUBMITTAL: SUP

SHEET TITLE: SITE PLAN

SHEET: C2.1



GRADING PLAN

SCALE: 1" = 20'-0"

2 DAYS BEFORE
YOU DIG CALL USA
TOLL FREE 1-800-227-2600

EROSION CONTROL NOTES:

1. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE A QUALIFIED EROSION CONTROL INSPECTOR. CONTRACTOR TO PROVIDE THE EROSION CONTROL INSPECTORS NAME AND QUALIFICATIONS TO THE ENGINEER PRIOR TO BEGINNING CONSTRUCTION.
2. INSTALL SEDIMENT FENCE AND PERIMETER EROSION CONTROL MEASURES PRIOR TO BEGINNING CONSTRUCTION.
3. LEAVE NATIVE VEGETATION UNDISTURBED OUTSIDE AREAS OF CONSTRUCTION.
4. MODIFY EROSION CONTROL METHODS AS REQUIRED DUE TO WEATHER OR CONSTRUCTION CHANGES.
5. SEE EROSION CONTROL DETAIL SHEETS FOR ADDITIONAL NOTES AND DETAILS.
6. LOCATION OF ESCP FACILITIES SHOWN ARE APPROXIMATE. ALL FACILITIES TO BE FIELD PLACED PER CONSTRUCTION REQUIREMENTS.
7. CONTRACTOR TO MECHANICALLY REMOVE SEDIMENT FROM ROAD AND SHALL NOT WASH IT DOWN STORM SEWERS.

ESTIMATED EARTHWORK QUANTITIES (TO SUB-GRADE):

CUT: 2,700 CY CUT
FILL: 1,200 CY FILL
TOTAL: 1,500 CY EXPORT
NOTE: THESE ARE ESTIMATED QUANTITIES ONLY. CONTRACTOR IS RESPONSIBLE TO CONSTRUCT PROJECT TO LINES AND GRADES AS SHOWN ON THE PLANS.

ESTIMATED AREA TO BE DISTURBED:

DISTURBED AREA: 65,000 SF

NOTES:

1. ADD 5.100 TO ALL FINISHED GRADE OR INVERT ELEVATIONS
2. NO SLOPES GREAT THAN 3:1 SHALL BE PERMITTED

STAMP:

DESIGNER: DRAWN: DESIGNED: CHECKED/STAMPED:

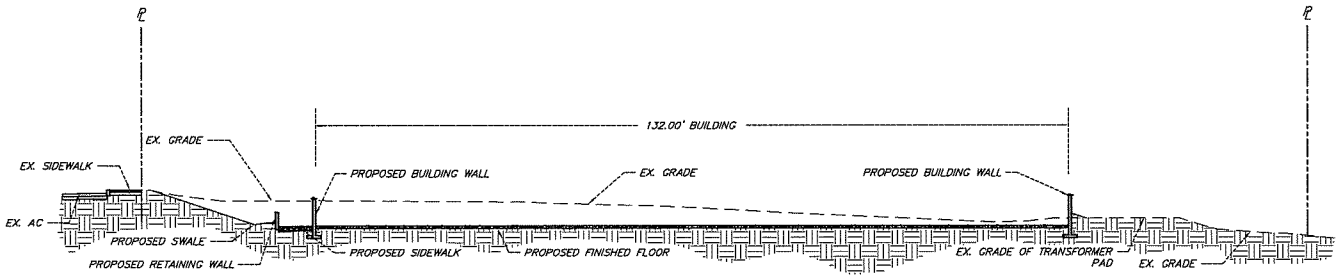
TECTONICS DESIGN GROUP
10451 Double R Boulevard, Reno, NV 89521
www.tectonicsdesigngroup.com
tel 775-824-9958
fax 775-824-9986

PROJECT/CLIENT:
Connect Meditation
Reno, NV
Sage property Ventures LLC
175 Knightsbridge Ct
Reno, NV

SUBMITTAL RECORD:
DATE: 05/12/20 SUBMITTAL: SUP

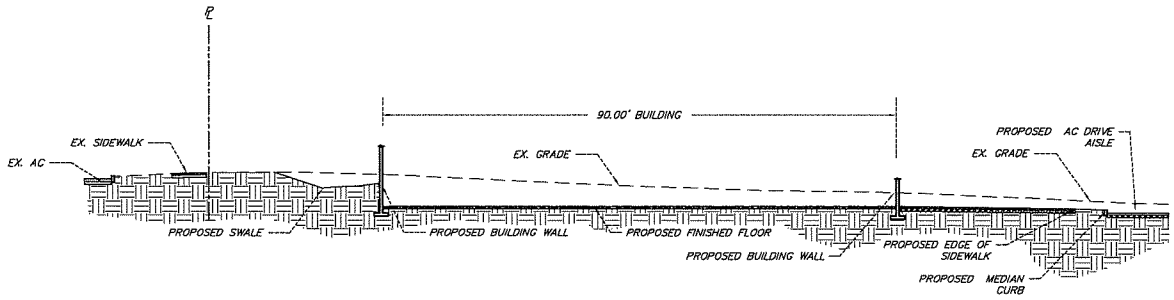
SHEET TITLE: GRADING PLAN

SHEET: C3.1



CROSS SECTION A-A

SCALE: 1" = 10'-0"



CROSS SECTION B-B

SCALE: 1" = 10'-0"

2 DAYS BEFORE
YOU DIG CALL USA
TOLL FREE 1-800-227-2600

DRAWN:
DESIGNED:
CHECKED/STAMPED:

STAMP:

TECTONICS DESIGN GROUP
10451 Double R Boulevard, Reno, NV 89521
www.tectonicsdesigngroup.com
tel 775-824-9988
fax 775-824-9986

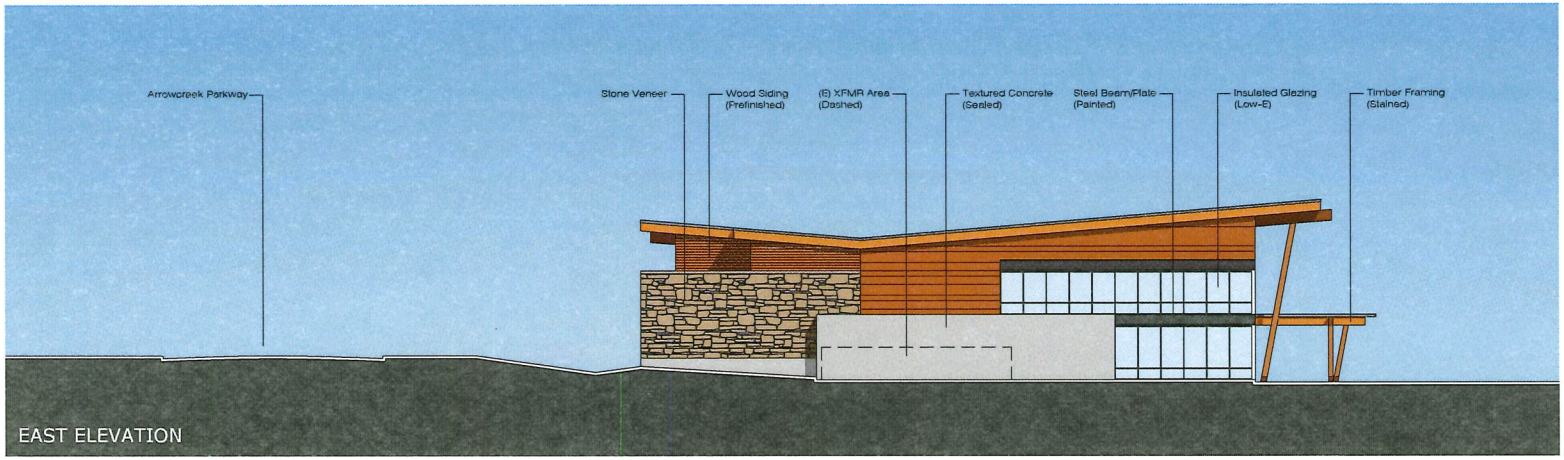
DESIGNER:

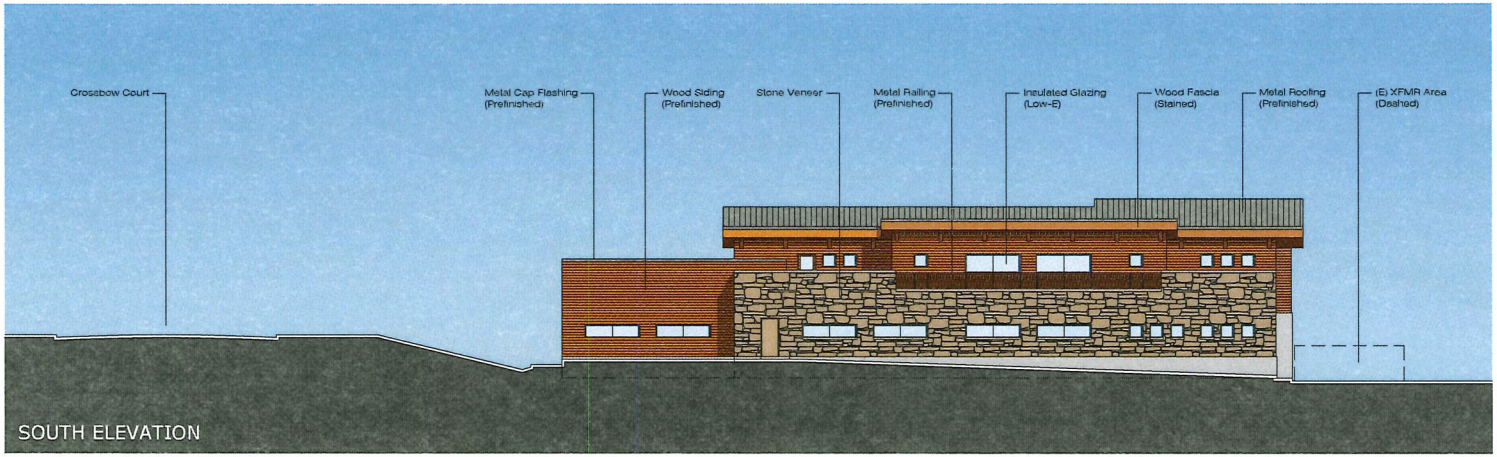
PROJECT/CLIENT:
Connect Meditation
Reno, NV
Sage property Ventures LLC
175 Knightsbridge Ct
Reno, NV

SUBMITTAL RECORD:
DATE: 05/12/20
SUBMITTAL: SUP

SHEET TITLE: CROSS SECTIONS

SHEET: C3.2

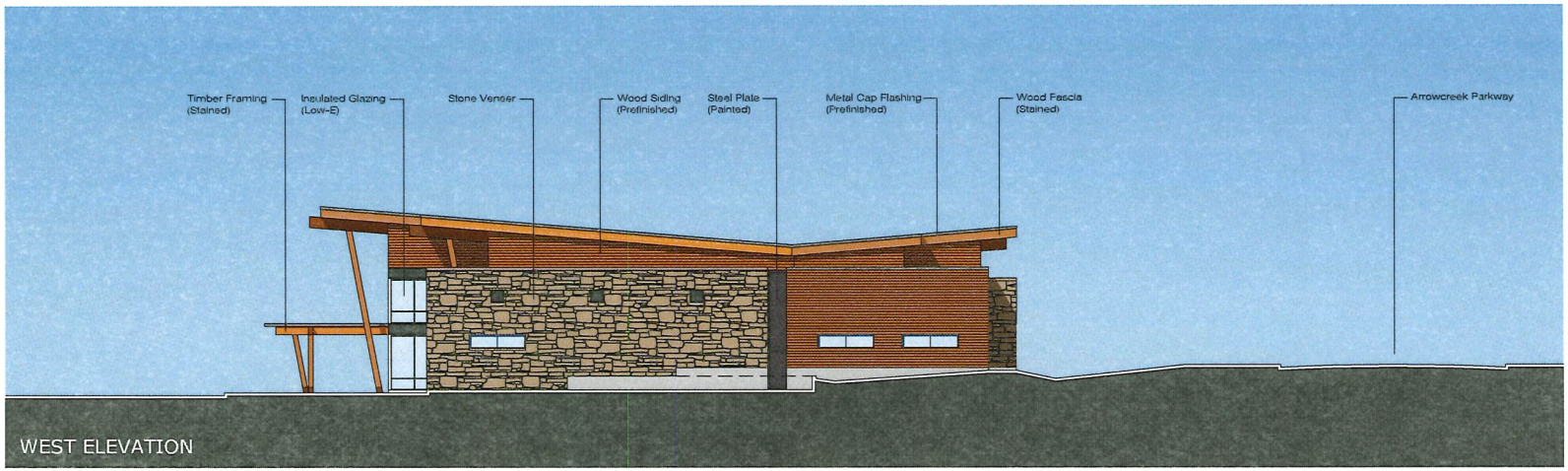


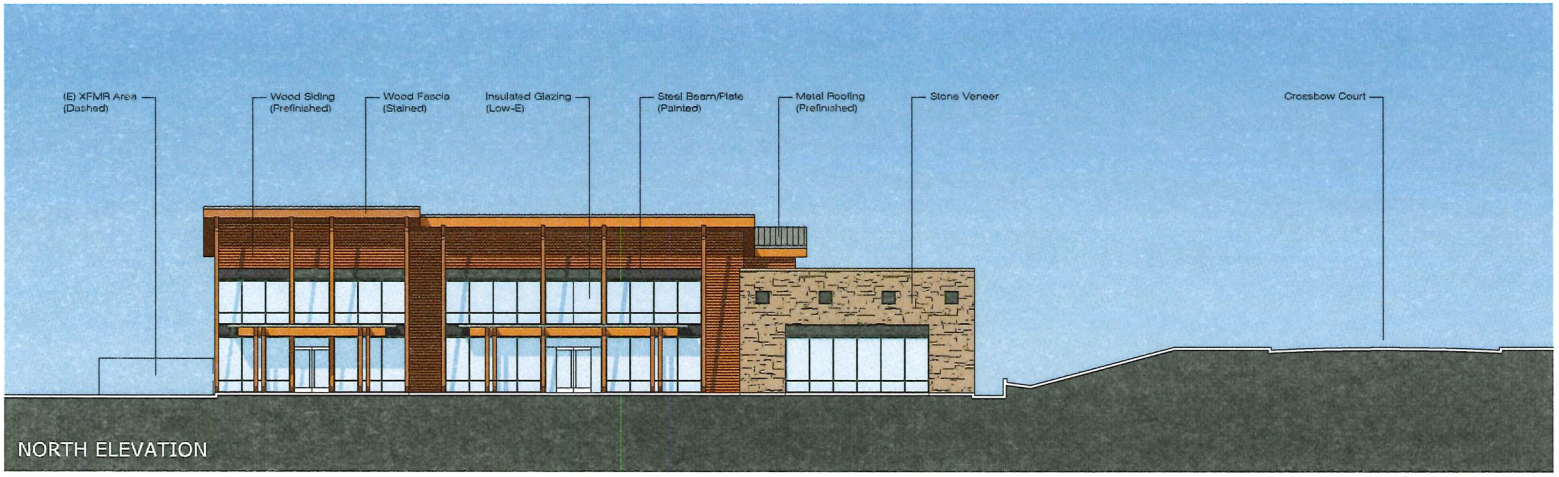


TECTONICS DESIGN GROUP

CONNECT NEIGHBORHOOD CENTER & GARDEN

Conceptual South & East Elevations | Washoe County | 20002 SUP

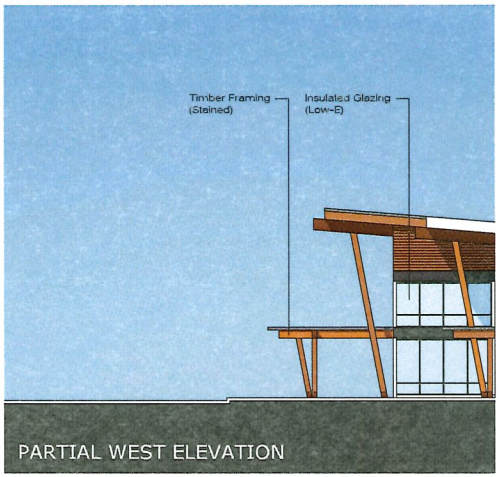


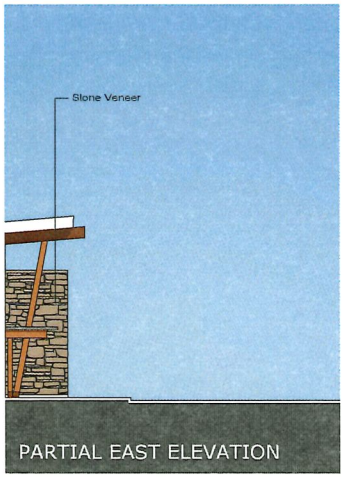


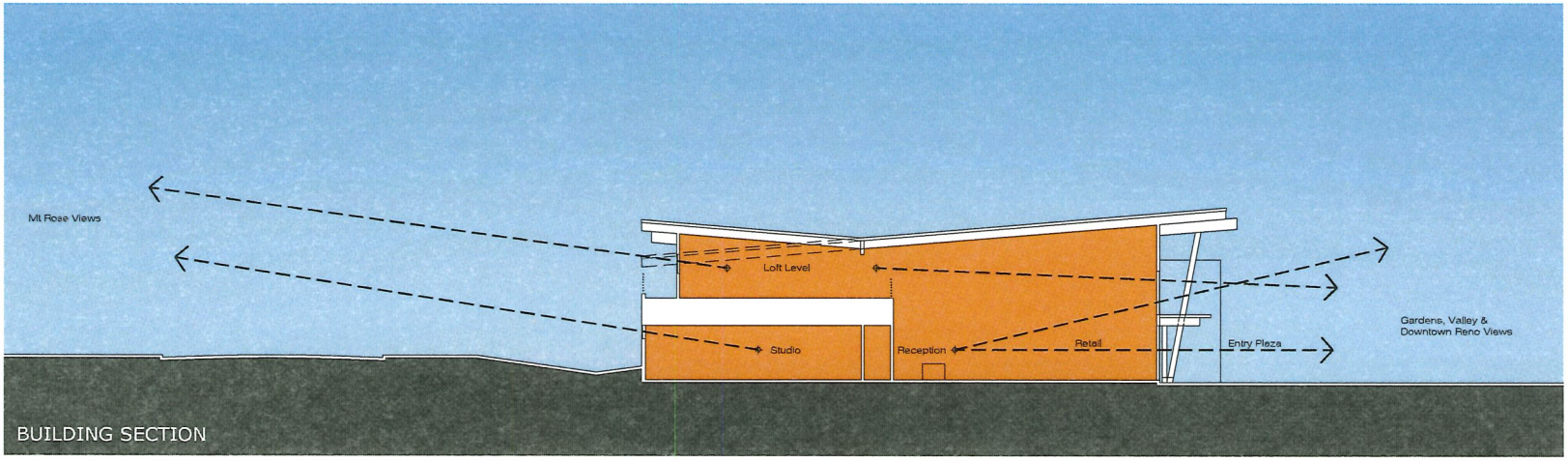
TECTONICS DESIGN GROUP

CONNECT NEIGHBORHOOD CENTER & GARDEN

Conceptual North & West Elevations | Washoe County | 20002 SUP



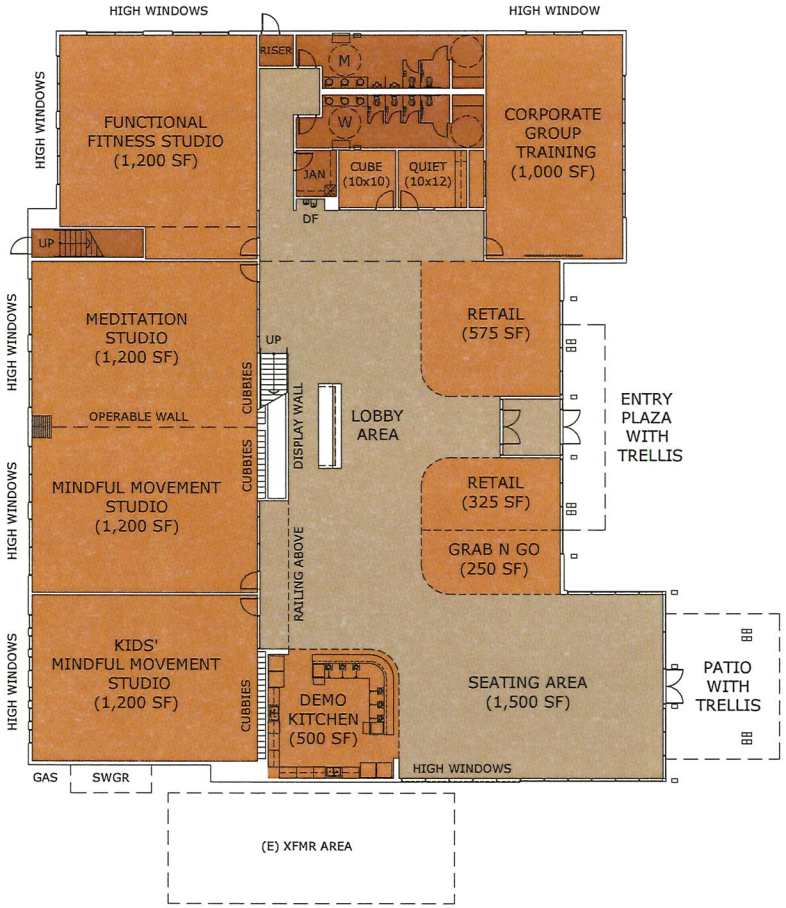




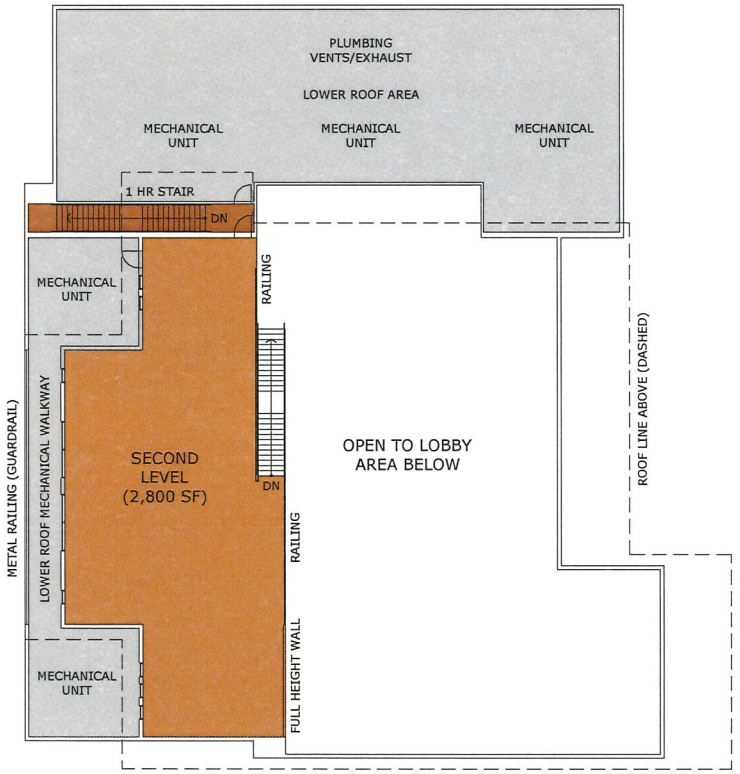
TECTONICS DESIGN GROUP

CONNECT NEIGHBORHOOD CENTER & GARDEN

Conceptual Section & Partial Elevations | Washoe County | 20002 SUP



GROUND LEVEL
13,215 SF



SECOND LEVEL
2,800 SF

N

0' 5' 10' 20'

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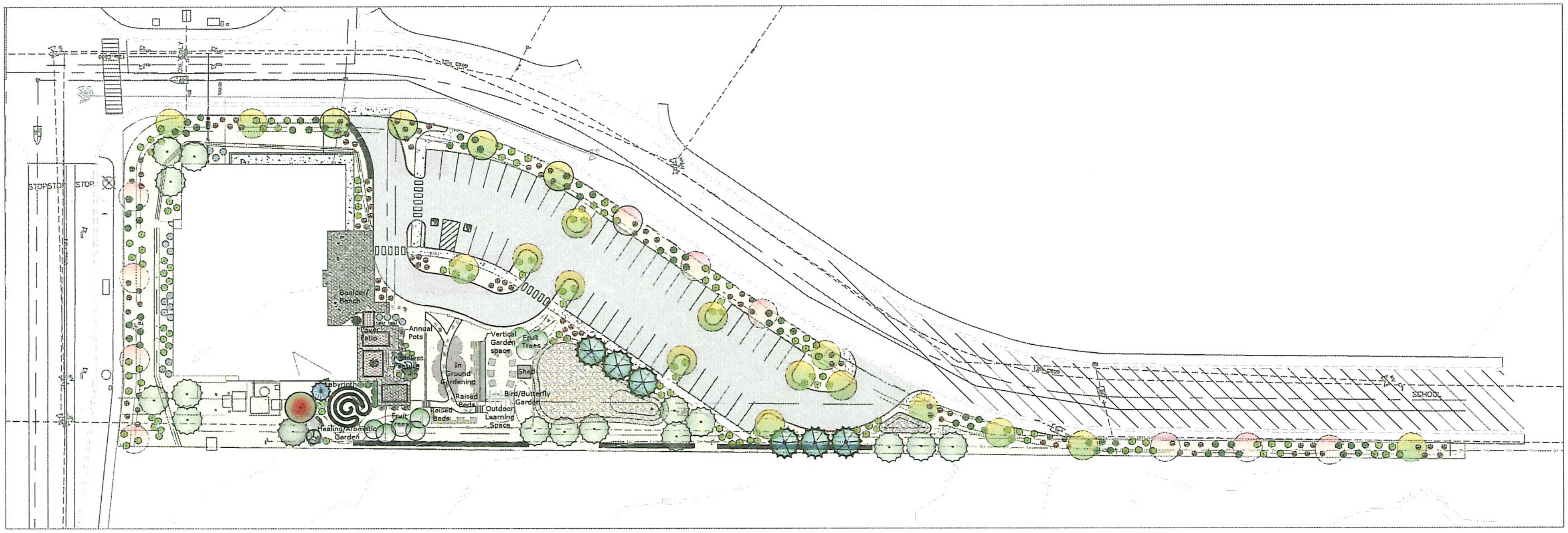
Conceptual Floor Plan | Washoe County | 20002 PR3A



LANDSCAPE REQUIREMENTS

Total Gross SF Of Entire Project Site	3 Acres = 79,160-SF
Total Net SF Of Landscape Area	**40,831-SF**
Total Min. Required Landscape	15,832-SF
Total Trees Provided In Landscape Areas	**65**
• 1 Tree Per 300-Sf of Required Landscape Area	53
• 1 Tree Per 10 Parking Spaces Required (46)	5
• 1 Tree Per 50'-LF Street Trees (1,030-lf)	21
Total Shrubs/Perennials Provided In Landscape	**338**
Total Shrubs Required - 50% Coverage after 1 year, 100% coverage after 5	

All Plant Material To Be Watered With Drip Irrigation On An Automatic Irrigation System

EVERGREEN TREES

1	**5' - HT (weeping evergreen)**
6	**5' - HT (landscape trees)**
16	**7' - HT (landscape trees)**
1	**5' - HT (ornamental)**

DECIDUOUS TREES

8	**#10 - CONT (fruit trees)**
1	**#20 - CONT (specimen trees)**
1	**#15 - CONT (japanese maple)**
30	**2" - CAL (landscape trees)**
1	**#15 - CONT (ornamental trees)**

EVERGREEN AND DECIDUOUS SHRUBS

338	**#5/#1 - CONT (assorted shrubs)**

1" = 30'-00"

0' 7.5' 15' 30' 45' 60'

NORTH

COPYRIGHT:

PLANT Landscape Architecture

DRAWN: D.D.
DESIGNED: D.D
CHECKED/STAMPED:
DAWN DONOVAN, PLA

STAMP:

REGISTERED LANDSCAPE ARCHITECT
Dawn Donovan
959
Expires: ____
STATE OF NEVADA

DESIGNER:

TECTONICS DESIGN GROUP

730 Sandhill Rd., #250, Reno, Nevada 89521
www.tectonicsdesigngroup.com
tel 775-824-9988
fax 775-824-9986

PROJECT/CLIENT:

Connect Meditation
Reno, NV

Sage property Ventures LLC
175 Knightsbridge Ct
Reno, NV

#: 15154

SUBMITTAL RECORD:

DATE:	SUBMITTAL
05/04/20	PRELIMINARY
05/12/20	SUP

SHEET TITLE:

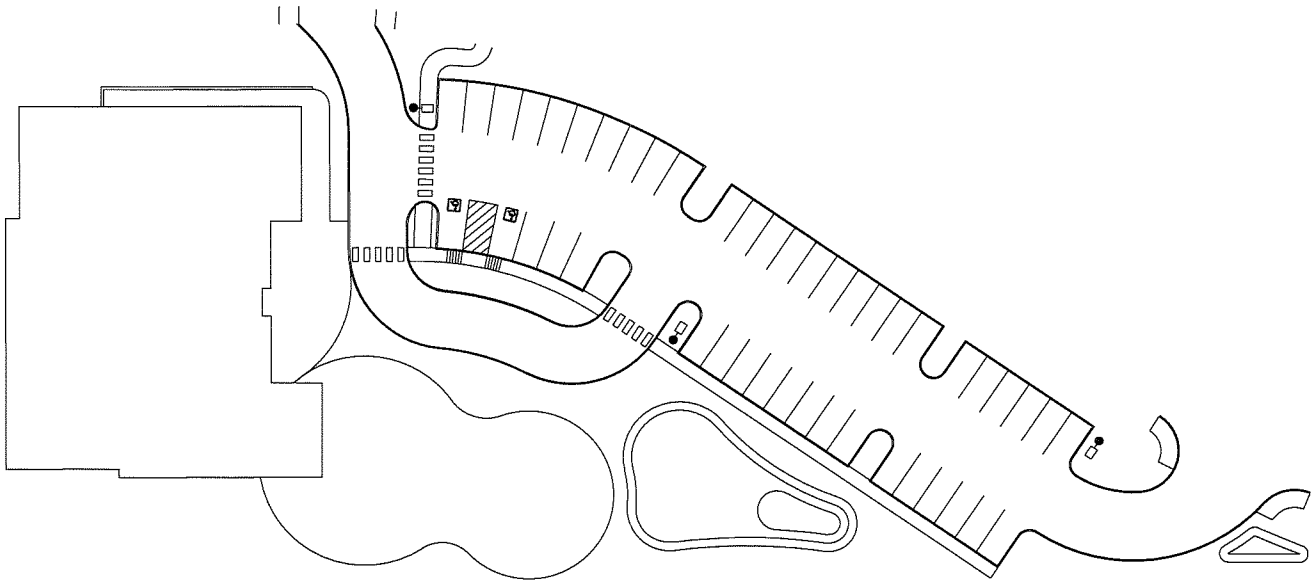
conceptual
LANDSCAPE PLAN

SHEET:

L1

LIGHTING SCHEDULE

SYMBOL	ID	QTY	MANUFACTURER	MODEL #	LAMP TYPE	VOLTAGE	WATTAGE	MOUNTING HEIGHT	DESCRIPTION
	P1	10	EIKO	VRT2-380-C5-740-U-D-T3-BZ	LED	120/277	300W	28 FT	PARKING LOT SITE POLE HEAD, LED 300W, 38000LM, 4000K, BRONZE, TYPE III DISTRIBUTION. WITH A 25FT BRONZE POLE, VERIFY PER LOCAL REQUIREMENTS PRIOR TO ORDERING - WATTS/LUENS, KELVIN LIGHT TEMPERATURE, TYPE DIST. MOUNTING CONFIG. FOR SINGLE HEAD, COLOR AND HEIGHT. VEIFY COLOR/HEIGHT BEFORE ORDERING.
	A. INSTALLATION OF LIGHT FIXTURES SHALL BE ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND RENO MUNICIPAL CODE REQUIREMENTS. B. VERIFY THE EXACT MOUNTING HEIGHT AND FINISH OF ALL LIGHTING FIXTURES WITH ARCHITECT PRIOR TO PLACING ORDER OR COMMENCING ROUGH-IN. C. LIGHT FIXTURES SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.								



1 LIGHTING SITE PLAN

Scale: 0 50' 100'

PRELIMINARY
NOT FOR CONSTRUCTION

STAMP:
DRAWN: SCOTT GARRISON
DESIGNED: SCOTT GARRISON
CHECKED/STAMPED: SCOTT GARRISON

DESIGNER:
GEC
GARRISON ENGINEERING & CONSULTING
8250 WILLOW RANCH TRAIL RENO, NV 89523
805-540-0621
www.gecengineering.com

PROJECT/CLIENT:
CONNECT MEDITATION
Reno, Nevada

SUBMITTAL RECORD:
DATE: SUBMITTAL
5/13/20 INITIAL RELEASE

SHEET TITLE:
OUTDOOR LIGHTING PLAN

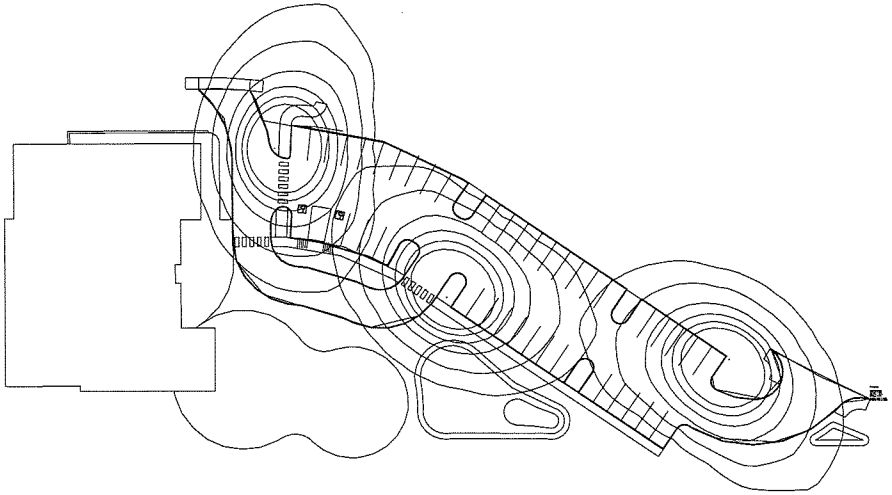
SHEET:
EP-1.0

Photometric Statistics

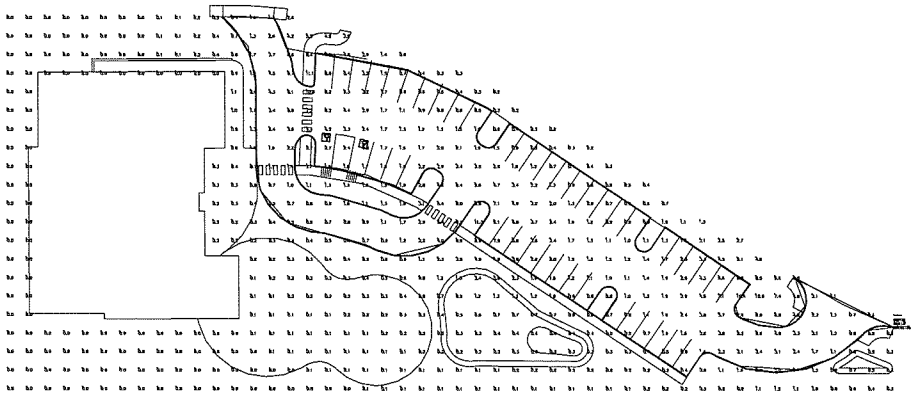
Connect Meditation Site

Site
Illuminance (Fc)
Average=1.39 Maximum=11.3 Minimum=0.0 Avg/Min=N.A. Max/Min=N.A.

Parking Lot
Illuminance (Fc)
Average=2.68 Maximum=11.3 Minimum=0.4 Avg/Min=6.70 Max/Min=28.25



2 LIGHTING DISTRIBUTION AREAS
Scale: N/A



1 PHOTOMETRIC CALCULATIONS
Scale: N/A

PRELIMINARY
NOT FOR CONSTRUCTION

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CHECKED/STAMPED: SCOTT GARRISON

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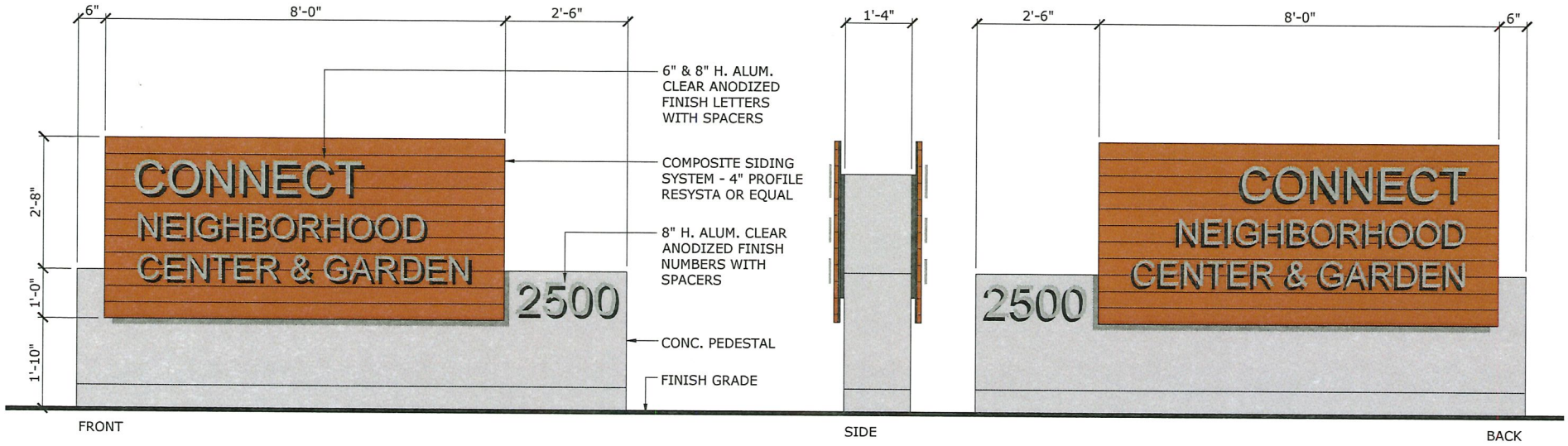
CONNECT MEDITATION
Reno, Nevada

SUBMITTAL RECORD:
DATE: SUBMITTAL
5/13/20 INITIAL RELEASE

SHEET TITLE:
PHOTOMETRIC PLAN

SHEET:
EP-2.0



MONUMENT SIGN ELEVATIONS

SCALE: 1/2" = 1'-0"

TECTONICS DESIGN GROUP

CONNECT NEIGHBORHOOD CENTER & GARDEN

Conceptual Monument Sign | Washoe County | 20002 SUP